A Knowledge Portal for Sustainable Facilities Management Practice

Elmualim, A.
School of Construction Management and Engineering, University of Reading, UK
(email: a.a.elmualim@reading.ac.uk)

Valle, R.
British Institute of Facilities Management and University of Reading, UK
(email: r.c.valle@reading.ac.uk)

Ludlow, G.
British Institute of Facilities Management
(email: gpludlow@yahoo.com)

Shah, S.
Jacobs Engineering, Reading
(email: s.shah@jacob.com)

Abstract

The majority of the UK’s building stock is already within its operational phase, and set to provide many years of service and support. Due to the slow replacement of the existing building stock, society and the business community cannot rely on new build facilities alone to meet the social, environmental and economic challenges of the future. The facilities management (FM) profession represents collectively the largest group of multi-disciplinary built environment specialists dedicated to the on-going improvement, operation and management of the UK’s existing building stock, and as such, has a primary role to play in implementing the sustainability agenda. Research suggests that at present the FM industry does not have easy access to the specialist knowledge, tools and supporting case study material necessary to make this a reality. In this paper case studies were conducted and developed into a knowledge portal to share good practice. The knowledge portal provides the FM industry with the appropriate tools necessary in contributing to the move of the UK’s FM profession towards a more sustainable future.

Keywords: sustainability, FM, knowledge management, climate change
1. Introduction

The premise of this paper is to bridge the knowledge chasm in the practice of sustainable facilities management through various case studies. The case studies were organised in a knowledge portal together with published articles and useful links. It is evident that facilities managers are in the forefront for delivering sustainable assets management, and hence further the venture for mitigation and adaptation to climate change. Facilities managers have existed for as long as human activities have been carried out in designated buildings and sites. Wood (2006) highlights the need to address existing building stock in achieving sustainability goals and it is this emphasis on the operational phase of buildings that is indeed key to the role of FMs, since in the developed world the majority of buildings in current use will remain for the next fifty years, carrying their embodied energy and operational energy requirement into the future. Barbour (1998) identified a UK market for building maintenance and repair of £28 bn, and this easily exceeds the £10 bn new build market identified by Wood (1999). This puts into perspective our shared understanding that there has always been a need to manage the physical fabric of buildings, equipment and furniture within them, and the efficient supply of resources and removal of waste. These functions will have existed throughout history, but the complexity of modern society and its increased use of resources mean that there is now more than ever a need for facilities managers of high calibre to meet the needs of business, government and society in the 21st Century. The Barbour (2000) study indicated that over 75% of FMs had responsibility for both the routine upkeep of buildings as well as for their longer term repair and may operate at a strategic level in this activity.

According the BIFM (2007) Facilities Management is considered to be one of the fastest growing professions in the UK. The UK Facilities Management market is worth £106.3 billion Shah (2007) with an annual growth of between 2% and 3% anticipated up to 2012. The industry and its market are forecasted to develop to include non-core functions including payroll IT, activities traditionally not associated with this profession, but which are increasingly being addressed by FMs. Brown & Pitt (2001) highlight the anticipated growth in the airport sector for example, a traditionally poor performer in sustainability terms and the likely impact that sectoral growth will make in sustainability terms. The scale of growth in the built environment and the consequential growth of the FM sector is anticipated to be enormous and consequently the contribution to the environmental problems.

The concept of Sustainable Facilities Management has developed in parallel with the overarching concept of sustainable development and the growing appreciation of the scale of predicted climate change. Recent extreme weather events such as Hurricane Catrina, flooding in South East Asia and the 2005 record hurricane season in the Caribbean have illustrated the need to address the threat of global climate change. These experiences have been reinforced by scientific evidence of rising temperatures, the melting of the polar icecaps and glaciers and revised predictions of more rapid temperature increases and extreme weather conditions. The case for change has been successfully made and the need to balance the three strands of sustainable development - social, economic and environmental – is apparent. It is both fortuitous and timely that the facilities management profession has grasped the agenda for change and is aspiring to develop a practical sustainability goals within this rapidly evolving profession. Facilities managers are now at the forefront of organisational
behavioural change and in a position to influence the behaviour of individuals working in business, government departments and public services within the facilities they manage. Governments at both national and international level are using regulation to bring reduce carbon emissions and manage demand. Much of the burden of regulation will need to be picked up by facilities managers at every level. Current examples of the impact of regulation are the Energy Performance Building Directive, now partly implemented, WEEE regulations from July 2007 and the changes to planning to move towards zero carbon construction.

Sustainability is becoming increasingly important for Governments, business organisations and community at large having experienced the consequences of the global warming. There is an urgent need to change the way people think and operate. The importance of sustainable development as a tool in the battle against the climate warming is well documented. The European Union as well as the UK government are designing and constantly introducing new pieces of legislation that are forcing the construction industry to achieve improved energy efficiency and to reduce the carbon emissions. Having said that, The built environment and the construction industry have a serious detrimental impact on the environment. The construction industry accounts for around 40% of all resources consumption and production of around 40% of waste including green house gases (Prasad and Hall, 2004). The built environment and especially buildings on their own use 45% of generated energy to power and maintain there in contrast only 5% is used to construct them (CIOB, 2004). The other problem of the present world is scarcity of resources and the situation is aggravating due to developing economies in China or India demanding large amounts of energy and materials. The situation is reflected through constantly rising price of energy, its limited and finite availability. The affordability and security of the supply is under a question mark. As Hodges (2004) says „All these lofty goals to reduce energy consumption and take better care of the environment are of clear benefit to the facility manager. Achieving these goals, however, is easier said than done”. This is due to a discrepancy between the abilities, knowledge, skills and willingness of the facilities manager to implement sustainability in their business and the fact that they are very often mandated to manage the facilities at the lowest possible present cost. The two desynchronised tendencies make another barrier that prevents the discipline of facilities management from becoming more sustainable.

In addition the social strand of sustainable development provides a focus on social justice and development, so ensuring community participation in decisions affecting wider site implications, participating in the sustainable development and possibly regeneration of the neighbourhood, embracing corporate social responsibility opportunities and possibly even buying fair trade catering supplies are all relevant. There is now an ever increasing focus on sustainable resource use as described by Barton, et al (2002) advocated the concept of strategic asset management (SAM) as a guiding principle for strategic resource use that includes the principles of ecologically sustainable development for quality of life goals.

The need for sustainable facilities management, and for skilled facilities managers to carry out this function, is therefore growing and the need to develop new ways of working to meet sustainability criteria is of increasing importance. The drivers now are to meet the challenges of applying sustainable development criteria to the management of facilities. This encompasses the life cycle of facilities, from design and construction to disposal, but often with a strong focus on the operational
phase. This phase provides a remit to factor sustainability into maintaining and repairing the physical fabric of the site, obtaining resources based on sustainability criteria and ensuring that this extends through the supply chain, minimising waste and disposing of it responsibly and reducing energy demand.

British Institute of Facilities Management (BIFM, 2007) reports on its website that “although the FM profession has been presented with an opportunity to make a real and measurable difference by driving the sustainability agenda forward, it does not at present have easy access to the specialist knowledge, tools and supporting case study material necessary to make this a reality”.

The change in focus that this represents is supported by BIFM and partners in setting up a Knowledge Transfer Partnership to raise awareness of best practice in the industry and to provide an electronic knowledge portal to share information that will allow professionals to build on their skills in this area. In order to tackle the problem a project was developed. The University of Reading’s School of Construction Management and Engineering in the partnership with the British Institute of Facilities Management is engaged in a project known as Knowledge Transfer Partnership (KTP). Its aim is to research the sustainability issues within the facilities management industry, design and develop investigative and diagnostic tools required to enable and facilitate the implementation of sustainability measures.

2. Definitions and scope of the FM industry

The concept of Facilities Management is continuously developing. Lord et al (2002) claimed that the term “originated in the late 1960’s to describe the then growing practice of banks outsourcing responsibility for processing of credit cards transactions to specialist providers.” The British Institute of Facilities Management (2007) claimed on its website that this is one of the fastest growing professions in the UK and describes the concept as “the integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities”. This commonly used definition of Facilities Management has been formulated first by the European Committee for Standardisation (CEN) and latter on formally adopted by the British Institute of Facilities Management. Franklin Becker, one of the Facilities Management pioneer, defines the term in the following way: „FM refers to buildings is use, to the planning, design and management of occupied buildings and their associated building systems, equipment, and furniture to enable and (one hopes) to enhance organizations’ ability to meet its business or programmatic objectives. FM thus refers to organizational effectiveness” (Becker, 1991).

Various institutions, professionals and organisations offer different definitions but the idea that they reflect is the strong relationship and interaction between buildings, services and organisations” core activities (Elmualim et al 2009). Organisations use buildings, services and assets to create an environment that can enhance the performance of their primary business. The remit of Facilities Management industry is very broad and is constantly growing as more activities are tend to be regarded as non-core ones and included in the facilities management sector. BIFM (2007) created the following range of ancillary services that are incorporated in the FM sector:
Facilities management used to be perceived in an old-fashioned way as to being concerned with caretaking, cleaning, repairs and maintenance (Atkin and Brooks, 2007). Recently this view is changing as facilities management now include also such issues as real estate, finance, human resource, health and safety, change and contract management. Atkin and Brooks (2007) highlighted that the issues such as domestic services or building and engineering services maintenance are simply the most visible ones and that neither of the FM responsibilities is more important than the other one.

Atkin and Brooks (2005) discussed the issue of a various background of the facilities managers as many of them ‘are not graduates from schools or departments of facilities management’. They are often qualified as architects, surveyors, civil engineers or accountant and often perceive the role of a facility manager as a new opportunity. Atkin and Brooks (2005) emphasise the importance of possessing certain attributes such as integrity, organisational and communication skills as these are the key to become a successful facilities manager. It is imperative, the writers point out, to be able to understand organisations, people and processes, as opposed just to the background on its own stand. Atkin and Brooks (2005) justified and gave their support to the idea of introducing specialised training and education within the FM. The professionals’ background and skills are necessary but they need to understand the way people operate in buildings, the way the use them and the ways in which their performance and productivity can be maximised to the benefit of the organisation and society at large. The broadening of the scope of the FM industry, constantly changing legislation and technology pose yet further requirements in regards to training and education.
3. The sustainability discourse

The term „sustainable development“ has had many interpretations and there have been numerous attempts to define it. The most oft-cited definition of the notion is derived from the report of the World Commission on Environment and Development called „Our Common Future“. The document, also known as Brutland Report, as the event was chaired by Bro Harlem Brutland – the Prime Minister of Norway, was published in 1987. The report described the sustainable development as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.

The simplicity of the definition of such a complex issue raised an avalanche of criticism. As Manson (2008) and Norton (2003) say that the definition as lacking purpose and its meaning is empty, but on the other side, „it can mean almost anything to almost anyone“ (Manson, 2008). The concept of sustainable development was generated over 20 years before the Brutland’s Report was created. Rachel Carson in her book „Silent Spring“ (1962) brought to the international attention the devastating effects of human activity on the environment and in this way pioneered the environmental movement. The link between the economic development and environmental degradation was first expressed and put on international agenda in 1972 at the United Nations Conference on the Human Environment in Stockholm. Unfortunately, there were very little signs of implementation of the environmental concerns into practice and attempt to minimise the depletion of the ozone and natural resources or to slow down the process of global warming. In the result, the environmental situation continued to deteriorate despite the international awareness and cry out for change.

In 1992, a major success was achieved at the United Nations Conference on Environment and Development, also called Earth Summit, in Rio de Janeiro. It resulted in adoption by the Member States of the Agenda 21 which was a proposed blueprint of actions in social and economic area required to achieve sustainable development across the globe. „Governments recognized the need to redirect international and national plans and policies to ensure that all economic decisions fully took into account any environmental impact‘ where the energy efficiency had a major role to play (UN, 1992).

The UK continues to tackle the issue of sustainable development by publishing the Energy White Paper in February 2003. It puts the country on the path to reduction of the carbon dioxide emission by some 60 per cent by about 2050 with the real progress seen by 2020 (BREE, 2003; 2007). In addition, the other objectives include reliability of energy supply; promotion of competitive markets in the UK and beyond so that the rate of sustainable economic growth is rising together with productivity; and ensuring that every house is adequately and affordably heated. In March 2005 the UK Government launched a new strategy for sustainable development called „Securing the Future“. The document presents a set of shared principles that will help to achieve the sustainable development. They were agreed by the UK Government, Scottish Executive, Welsh Assebly Government and the Northern Ireland Administration.

- The publication also establishes the priority areas of action shared across the UK. These are:
- Sustainable Consumption and Production
Climate Change and Energy
Natural Resources Protection and Environmental Enhancement
Sustainable Communities

4. Importance of sustainable FM

The main aspect of the Sustainable Facilities Management is its contribution in the battle against climate change. It is estimated that only 5% of generated energy is used in the construction process and 45% is used in order to power and operate the buildings (CIOB, 2004). The Organisation for Economic Co-operation and Development (OECD, 2003) highlighted that buildings consume about 32% of the world’s resources and that includes 12% consumption of water. The emission of CO$_2$ as a result of such large consumption is enormous and its contribution to the problem of global warming is significant. In this respect, there is a great potential for substantial reductions of these patterns and following that, the substantial reduction of the detrimental effect that it exerts on the environment.

The other aspect of introduction sustainable measures in FM industry is the problem of rising prices of fuel and insecurity of its supply as a result of intensive economic activities of two large developing countries – China and India. The increasing demand for the resources is feared to have aggravating effect on the climate change but also could generate the „fuel poverty” and insecurity of supply and hence exacerbate social problems.

5. Sustainable FM: knowledge portal

The overall aim of this study is to investigate the nature of the sustainable facilities management and provide a benefit to the industry and community in the form of best practice guidance. The objectives of this project are as the following:

- Establish the existing level of understanding and application of sustainable knowledge and practice within the facilities management profession
- Identify the key areas of Sustainable Facilities Management where clearer practical tools, information and industry best practice are required
- Identify the benefits of sustainable facilities management
- Determine and ascertain the existing drivers for implementation of sustainable practice in the facilities management industry
- Determine and ascertain the existing barriers for implementation of sustainable practice in the facilities management industry
- Produce a best practice guide comprising case studies for the facilities management practitioners and community

The data required establishing the level of sustainable knowledge and practice within the facilities management industry will be collected through an online survey in a form of self-administered questionnaires. The survey was accessed through the British Institute of Facilities Management website and made available to subscribing members. The received data provided information on the current state of theoretical and practical knowledge among the professionals; and identified areas in
where there is a lack of practical tools, guidance and information which are as follows (Elmualim et al 2009; 2010):

- Developing a sustainability policy for my organisation
- Constructing a business proposal incorporating social, environmental and economic benefits
- Waste management and recycling
- Energy management
- Specification of sustainable products and services
- Ethical purchasing
- CO₂ footprinting
- Specification of sustainable M&E
- Occupancy satisfaction
- Biodiversity
- Community engagement
- Sustainable building and workplace design
- Sustainable travel
- Legal and statutory requirements
- Health and safety
- Flexible working
- Building disposal

In response to this stringent need a knowledge portal was developed www.sustainabilityinfm.org.uk. Figure 1 shows the home page of the knowledge portal. The portal consists of practical case studies, articles and links to various sources of information dealing with climate change and sustainability in general and the practice of sustainable FM in particular. A case study template was developed around nine major issues, as follows:

1. **What was done?**
   - Brief description of practice
2. **Drivers for the practice**
   - List main drivers toward development & implementation of practice
3. **Business Case**
   - Initial cost?
   - Payback?
4. **People involved in developing and implementing the practice.**
5. **How was it done?**
   **Initiation stage:**
   - Main driver for the project?
   - How was the need identified?
   - Situation in the organisation relevant to the practice.
   - Alternatives that could solve the problem?
     - Business case built or experience based?
   - Criteria for final decision?
   **Planning process:**
• Setting a baseline for measuring performance?
• Criteria for identifying areas for improvement?
• Criteria for selection of appropriate technology and/or strategy?
• Technology selected and/or strategic plan to be implemented?

**Implementation:**
• Issues hindering implementation process?
• Timescale of implementation? If ongoing, outline the phases?
• Training required?

**Operation**
• Complexity of operation?
• Issues hindering operation?

**Monitoring and feedback:**
• Mechanisms in place for monitoring and stakeholder engagement?
• Performance indicators?
• Other issues

6. **Benefits (Direct & Indirect)**

**Expected and Achieved**
• Tangible (e.g. financial, energy, CO₂, trees, water, waste to landfill savings, etc)
• Soft benefits (morale, productivity, commitment, branding, profile, etc)

7. **Barriers hindering development and implementation of practice & How were they overcome**
• In addition to the ones expressed in Section 3 “How was it done?”, any others?
• Organisation’s strategy to overcome these issues?

8. **Further opportunities**
• List a few opportunities (if any) created based on the implementation of this practice. Eg. To expand to other buildings or to look to new alternatives.

9. **Lessons learnt**
• Retrospectively, list a few lessons learnt from the practice e.g. in terms of selected technology, staff engagement and/or overcoming barriers.

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**Figure 1:** The home page of the Sustainable FM Knowledge Portal
The current status of the knowledge portal with the uploaded, in revision, in progress and on stand-by documents including case studies, articles, links and fact sheets. There are 22 case studies and 10 articles on the web site. Figure 2 gives the categorisation of these case studies by subject covered.

6. Conclusions

Facilities Management (FM) is one of the fastest growing industry with almost 10% contribution to the UK economy. With the rising legislative requirements and targets to tackle global warming, FM are in the forefront in delivering the national and international sustainability targets. The lack or the limited understanding of the key concepts of sustainability and lack of practical knowledge contribute to the little implementation and effectiveness of the sustainable practice in the FM industry. It was indicated that the energy management and the waste management and recycling were the primary areas where more information, practical tools and guidance is required. Other issues included developing a sustainability policy for my organisation, constructing a business proposal incorporating social, environmental and economic benefits, waste management and recycling, energy management and specification of sustainable products and services, to mention a few. In response to this requirement a knowledge portal was developed for sharing and dispensation of good practice in sustainable facilities management www.sustainabilityinfm.org.uk. The knowledge portal consists of case studies, articles, links and fact sheets. The provision and such knowledge portal is vital in contributing to the education and training of FM professionals, if sustainability discourse is to materialised.
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