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CONFERENCE THEME
Understanding Best Practices in Higher Education Administration: Challenges, Constraints and Successes

PRESENTATION SUB THEME
Caribbean higher education administration: A look at best practices

PAPER TITLE
Towards Best Practices in Facilities Management (FM): Incorporating Sustainability into FM at the Caribbean Higher Education Institute (HEI) of the Future

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Introduction

"Universities have a responsibility to lead society towards a sustainable future."

Higher education institutions (HEI's) such as universities, community colleges, technical and vocational schools and research institutions should have high performance facilities if they are to maintain competitiveness and be attractive to faculty and students into the future. Facilities management is an administrative function that is important in assisting HEI's in achieving the necessary performance required by their facilities to move towards the campus of the future. In fact research has shown that increased competition and energy/environment were high driving forces that will cause universities to move to more ecologically sustainable buildings that can provide that competitive edge. It was also shown that the overall quality of the HEI's physical facilities impacted on student recruitment and retention. Sustainability or ecological sustainable development (ESD) is a key enabler of the higher education institution of the future. The facilities management professional within the HEI is in the best position to incorporate sustainability into the business as usual administration of the HEI. This can be achieved through sustainable facilities management or SFM as demonstrated in the model below (figure1).

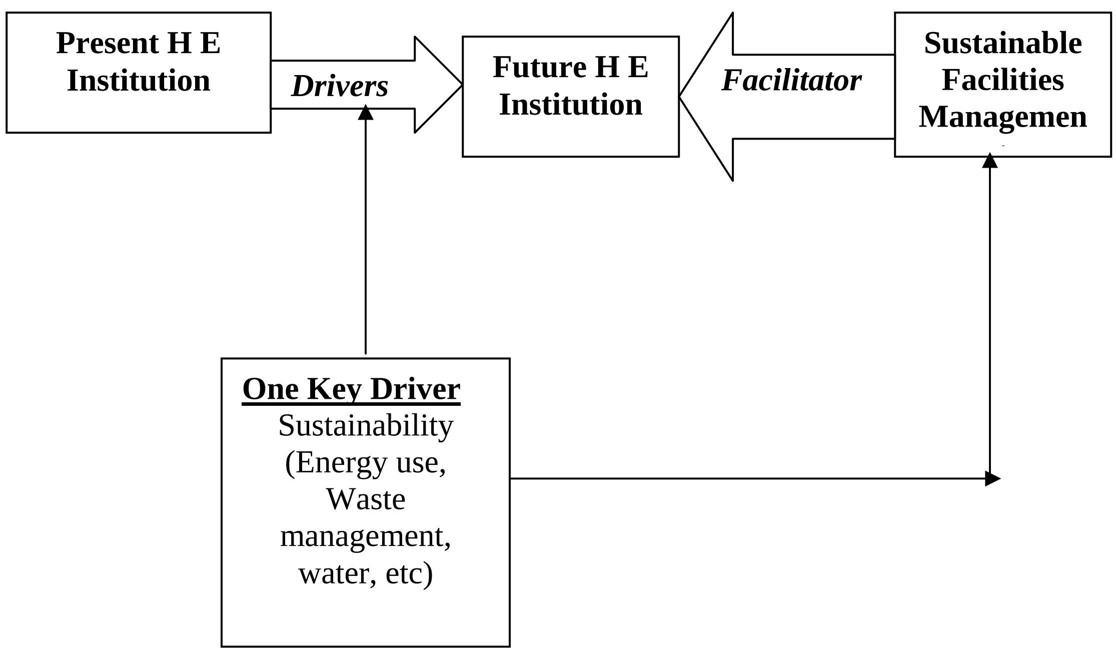

Figure 1: Towards the Higher Education Institution (HEI) of the Future

Sustainable Facilities Management (SFM) is a facilities management process that optimizes financial, environmental and social factors in support of the primary purpose of an organization (Ure, www.practicalfm.co.uk). The facilities management profession/function within higher education institutions in the Caribbean has the skills, knowledge and ability that are necessary for moving towards ecologically sustainable buildings and to continually improve on the quality of the facility. Armed with the skills of been able to integrate interdependent disciplines, the knowledge of ecological sustainability and with the ability to function at the operational, tactical/planning and strategic levels the facilities professional is poised to embark upon the process of incorporating sustainable practices into facilities management at higher education facilities. By incorporating sustainability into the FM practice, the higher education facility will move closer to achieving the Campus of the future and hence placing the university that focuses on it in a good competitive position.

Attaining this position however, requires a great deal of work and the ability to measure the performance of that work. In this regard, universities have begun to measure their ESD performance and benchmark against each other with the view of obtaining best practices. The model used by these higher education institutions was developed by the Tertiary Education Facilities Management Association (TEFMA) and it was done within the context of corporate social responsibility. It focuses on the triple bottom line approach of economics, social and environmental factors and is parallel to the definition of SFM cited above.

The higher education institution is in a unique position to demonstrate the use of this model to their core customers-students. In this regard the institutions that embark on SFM will position themselves as leaders and change agents within the Caribbean, thus pushing them further up the competitive ladder a key benefit that can be derived by meshing sustainable facilities management with their learning and teaching activities.

In this presentation we will look at the research findings of the forces that are driving the campus of the future and the impact of facilities on student recruitment and retention. We will see that in general facilities play a key role in shaping student's perception when choosing universities and they could also impact their decision to stay. Through the use of SFM the quality of the physical aspects of a facility can be improved and sustained. As such how sustainability is incorporated into facilities management will be discussed in some detail. This will then flow into the gist of the paper where a detailed account of the use of the TEFMA ESD Assessment Tool will be presented. The paper will end with a brief discussion on the benefits, challenges and solutions of using SFM in the management of the higher education institution of the future.

Background

Research has shown that many forces drive the look and shape of the higher education institution or campus of the future. The research findings reveal that: rising student expectation was the top driving force of change, with increased competition; technological change; population changes consistently picked as drivers into the next 5-7 years. Sustainability was chosen by both Comprehensive/doctoral institutions and Community Colleges as a driving force that can shape the future of the higher education institution (Facilities Manager, Nov/Dec 2006). In fact, research institutions felt that increased competition and energy/environment were high driving forces and two of the top driving forces that will shape the future. The scenarios they predicted into the future were among others "Universities forced to move to more sustainable, efficient buildings."

In their research paper "The impact of facilities on student choice of university" (Price, If et al, 2003), the researchers concluded that among other items "… facilities or estates factors can differentiate a particular institution." The researchers also forcefully concluded that "…for a number of institutions that impact is clearly and unambiguously confirmed." Another research reported in the Facilities Manager (May/June 2006) sought to determine the relevant importance of an institution's physical assets on the students choice of higher education institutions. On the issues of recruitment, and the relevant importance that broadly described institutional physical characteristics had on the decision of the students, two-thirds of the respondents felt that the 'Overall Quality of the Physical facilities' and half of the respondents indicated that the 'Attractiveness of the Campus' were "Essential" or "Very Important" to their decision. The report on the survey further revealed that on retention issues facilities also played a role. It was reported that 'Facility in my major'; 'Library'; 'Classroom' and 'Technology' ranked fairly high in importance….

In summary these researches have said that:

- Sustainability, chosen by even Community Colleges, can drive the changes of the campus of the future and that higher education institutions may have to move to more efficient and sustainable buildings;
- The physical aspects, such as buildings, classrooms etc, have a definite impact on a student's choice of University and on whether or not they will remain at that university.

The facilities (when used here means buildings, their services and property) are therefore important to the existence and sustenance of higher education institutions. As a result the professional practice of facilities management plays a key role in influencing the impact of the facilities function on both the indoor environment and on the environment in which the building functions. These functions which include operations and maintenance, health and safety, environmental management and energy management indicate that the facilities professional can play a key role in the move towards sustainable higher education facilities. Let us now look at the overlap between facilities management and sustainability and how the FM can use sustainability in their current roles.

The Interaction of Facilities Management and Sustainability

The International Facility Management Association defines facilities management as "a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology" (Shah, 2007). Facilities Managers should therefore have the knowledge of multiple disciples- finance, technical, environmental management, etc and be able to put them together to provide the top quality, functional environment required by the campus of the future. They are at the forefront when it comes to managing a building's performance and are crucial in the creation, operation and eventual demolition of a building. They provide the requisite management skill through out the life cycle of the building. The facilities management input is needed through a facilities life cycle to ensure the performance of the facility is sustained.

The more widely known and most accepted definition of sustainable development was formulated by the World Commission on Environment and Development. It says that "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" This development ensures that the present quality of our lives and the lives of our future generations increase over time. The definition also implies that life depends on nature and the resources it supplies. We as inhabitants of the natural environment depend on these resource and use them to support and improve our lives. We also use these resources in creating our built environments.

Facilities management therefore, which deals with the built environment and the processes within it impacts on the natural environment. Our processes within the built environment use the natural environment as a sink where waste etc is deposited. The built environment protects us and our processes from the forces of the natural environment. At this point of interaction between the built and natural environments sustainable facilities management (SFM) resides (figure 2). SFM therefore focuses on ecological systems and their interactions with humans, in the context of the built environment. In other words it looks at the interface between our built structures and the natural or ecological systems in the environment.

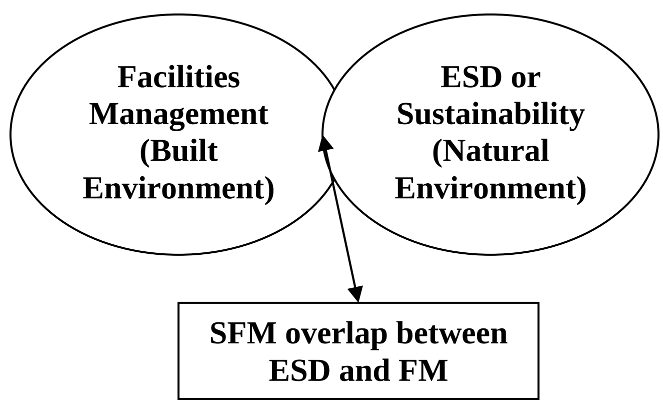

Figure 2: SFM where FM and Sustainability Meet

Sustainable buildings and SFM

Unlike the natural environment the built environment means buildings, places and structures in which we live work and play. The built environment consists of both buildings and landscape architecture. Buildings are described as 'architect-designed structures which enclose internal spaces, provide shelter and allows creation of an internal space. Buildings are made up of five system categories: architectural and structural; electrical; lighting; mechanical and instrumental.

When buildings are designed these systems are considered to interact to create the optimum performance of the building during the buildings' life. This design for performance focuses on three critical objectives. The physical performance of the building, which considers environmental impact and energy efficiency; the functional performance which directly benefits the occupier and includes space, health and safety and comfort; and the financial performance-the way in which we use buildings and the way they will impact on capital and revenue, investment and depreciation.

Buildings go through a life cycle that takes its through design, construction, commission, operations and maintenance to demolition. A sustainable or green building starts with a green design, which considers the impact of the building on the environment through each of the stages of the building's life. According to the ASHRAE Green Guide (2003) "… a green building is one that achieves high performance, over the full life cycle, in the following areas:

- **Minimal consumption-of non renewable energy source, water, land; corollary to this is maximization of renewable resources to meet building's need**
- **Minimal atmospheric emissions having negative environmental impacts (greenhouses gases etc)**
- **Minimal discharge of harmful liquid effluents**
- **Minimal negative impact on site ecosystems**
- **Maximum quality of the indoor environment, including air quality; thermal conditions; illumination; acoustics and visual aspects**

It is much easier though to incorporate the sustainability process into the design stage of the building's life, since it is much easier "to create green buildings from the start, than it is to modify existing systems and recreate them into energy-efficient, eco-friendly workplaces. However, sustainable buildings must perform high in the five areas during its entire life cycle. Sustainability means much more than designing and building green buildings-…" (Roskoski, 2006). The facilities management function must always be considering the delicate interaction between built and natural environments at every point in the life cycle of the building. SFM is important therefore at every stage of the building's life.

The Role of SFM in the HEI

Facilities management is also defined from a strategic perspective and the Centre for Facilities Management (CFM, 1996) defines it as "The process by which an organization delivers and sustains support services in a quality environment to meet strategic needs." HEI Administrators are continually making decisions relating to faculty and staff growth and reduction; student recruitment and retention; cost reduction; revenue generation and research focus to name but a few. These decisions inevitably translate into facility adjustments.

The facilities professional who functions at three levels as shown in the model below; is always working at these levels to meet these strategic needs. At all levels the facilities professional can impact on the performance of the building and indeed on its sustainable performance. At level C maintenance practices must be in-keeping with environmental practices. At the planning level, the environmental issues must be considered, especially in the renovation projects where energy efficiency initiatives can be implemented. And most importantly at level A, where the financial performance of all actions at all levels are manifested. The facilities professional is always focused on the performance of the building, through the synthesis of the people, the space/place in which they work and the processes and technology that they use to execute their functions. They must also be able to turn the HEI's strategies into 'brick and mortar' or even 'clicks and mortar'.

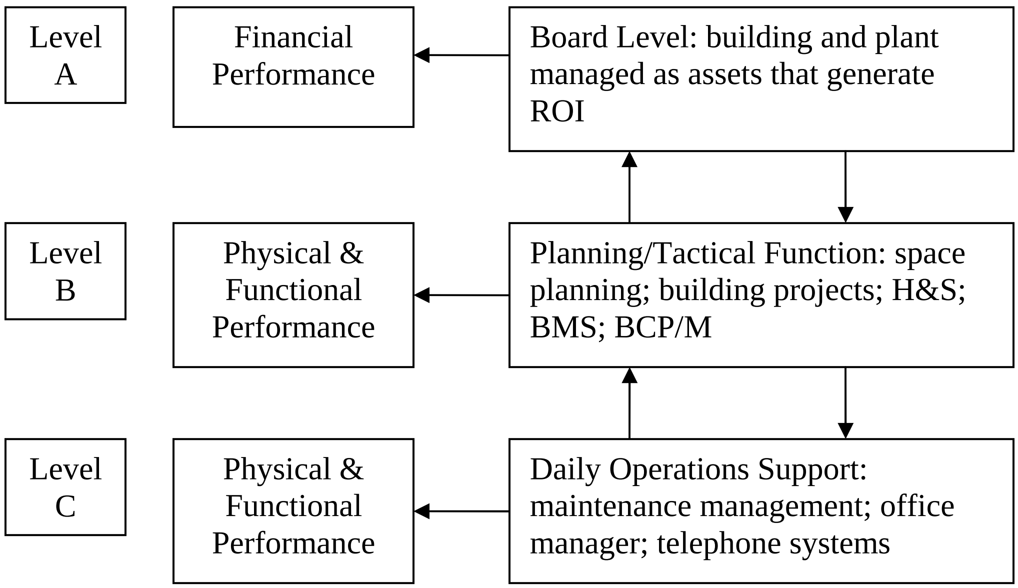

Figure 3: The Functional Levels of the Facilities Professional

The facilities function bears heavily on the green or sustainable performance of a building. The facility must perform high at all levels indicated by the ASHRAE definition. It must not only be designed green, it must be managed so that its high performance can be sustained. The facilities professional armed with the processes of sustainable facilities management applied at all levels of the roles functionality has tremendous influence on the performance of the building through its entire life. Sustainability therefore has to be systematically incorporated into the facilities management function and be constantly measured and improved if sustainable buildings are to be created and recreated. The TEFMA model and assessment tools will assist the HEI Administrator achieve just that.

Developing and Using the TEFMA Benchmarking Model

The Tertiary Education Facilities Management Association has developed an ESD Model for incorporating sustainability into facilities management at higher education facilities. This model was developed for TEFMA members which are New Zealand and Australian tertiary education organization. The model is presented here to the Association of Caribbean Higher Education Administrators (ACHEA) as a guide to incorporating sustainability into facilities management and measuring its performance at all its members' institutions.

The model is developed in the context of corporate social responsibility (CSR) which utilizes the familiar triple bottom line (3BL or TBL) approach. The interconnected circles represent each aspect of the 3BL and they contain activities relating to the HEI's facilities (TEFMA, 2004). These interconnected circles are encapsulated by the building life cycle, beginning with the planning phase.

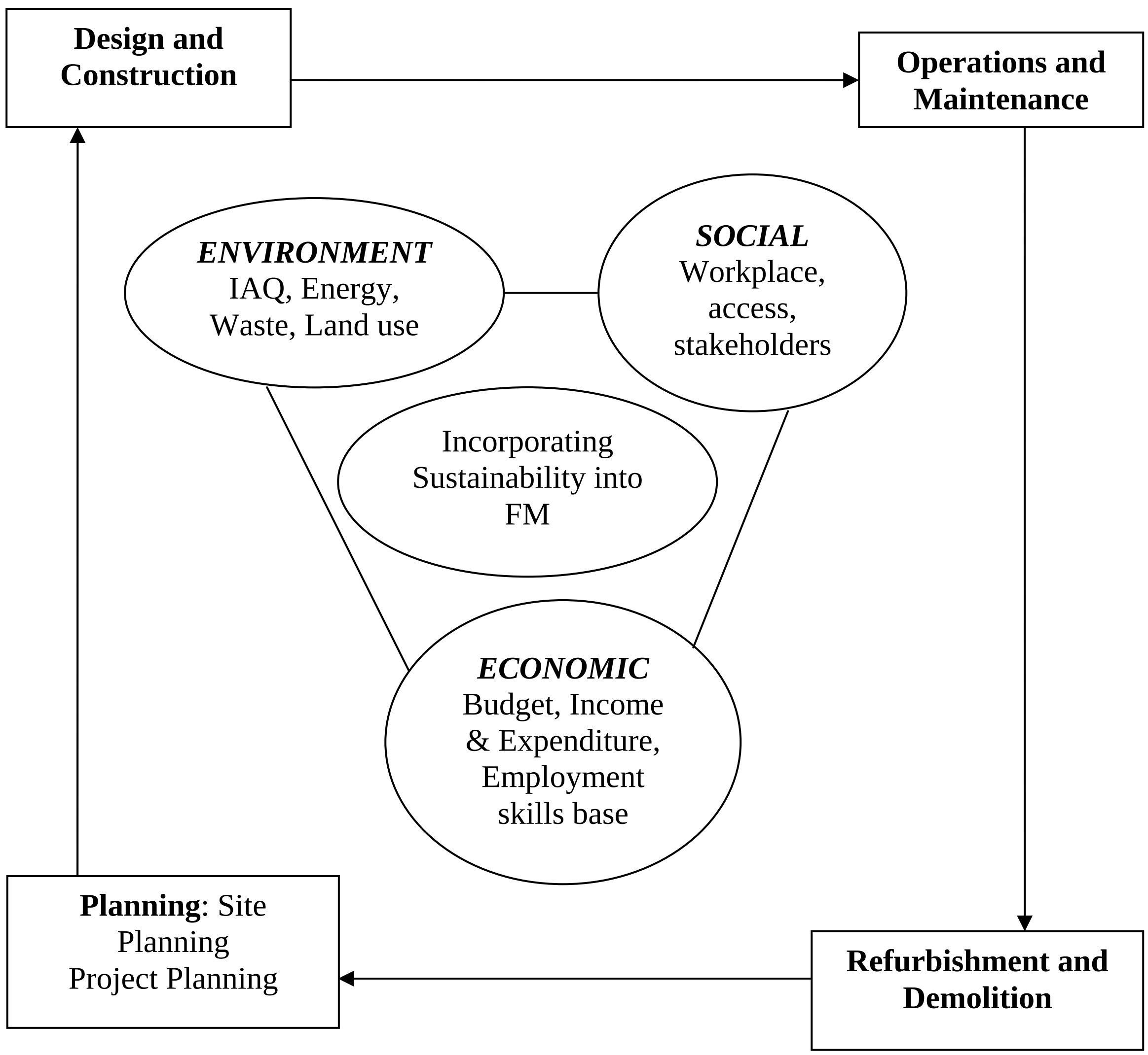

Figure 4: ESD Model for Incorporating Sustainability into Facilities Management Adapted from TEFMA Guide, 2004)

At the middle of the model is the incorporation of the sustainability aspects which has its basis in corporate responsibility. It captures the financial, environmental and social factors that are necessary to support the HEI's primary function. This is the foundation for SFM and the basis for its implementation and eventual assessment and benchmarking. The tables in appendix 1 present facilities aspects, with some Caribbean examples (Grenada included) that are related to each circle in the model. Appendix 2 provides some key performance indicators that can be developed for each of the 3BL circles in the model.

Using this model the TEFMA has developed the

1. **ESD Benchmarking Survey and**
2. **ESD Benchmarking Assessment Tool and Checklist**

The first form is presented in table A and it seeks to capture the HEI's ESD performance at each stage of the building's or a development's life cycle. The survey seeks to determine whether or not an HEI has fully implemented or has not implemented ESD at each stage of the building life cycle. The first section in box 1 explains how the survey is intended to be used.

The second instrument was also designed to capture data at the four phases of a building's life cycle. A comprehensive checklist of over 100 items is used to capture data for the survey. An abridged section of the list is provided in table B and a demonstration of its use is given in the second section of box1.

Box 1: How to use the ESD Assessment Tool and ESD Checklist

Using the ESD Benchmarking Survey

For each statement pertaining to the phases of the building life cycle you are required to rate your compliance level.

For Planning if the institution has not yet developed systems for incorporating ESD into facilities planning then there is 0% compliance and the scores of 10, 15, 20 and 25 are removed form the other columns. Score = 5/25

Similarly for the other four phases rate your compliance so as an example:
Design and Construction: 81% compliant, score = 20/25
Maintenance and Operations: 45% compliant, score = 15/25
Refurbishment and Demolition: 2% compliant, score = 10/25

Sum the scores, which is 5+20+15+10 = 50

Compare to self-evaluation, a score of 50% rates as Below Average Practice

Using the ESD assessment tool and checklist

The structure of the checklist reflects both the ESD Model (figure 2) and the benchmarking survey (table A). The checklist is divided into the four elements of a building's or development life's cycle and can be used to assess a score of 25 for each of these elements. Each element again is captured in both the model and survey.
To use the checklist as an assessment tool, each item must be assessed for a score of 0 to 2, where:

- ✓ 0 = not implemented/considered
- ✓ 1 = Partially implemented
- ✓ 2 = Fully implemented

At the end of each element, the score is added and standardized to a score of 25. This score can then be transferred to the ESD Benchmarking Survey sheet.

Table A: Benchmarking Survey (TEFMA, 2004)

Environmentally Sustainable Development	Institution is yet to develop systems in the area (0%)	Institution at early stages of developing and implementing systems in the area (1-39%)	Statement is partially true with further work/refinement to system required (40-79%)	Statement is generally true but with some minor exceptions or omissions (80-99%)	Statement is true in all regards (100%)	
The elements of ESD have been incorporated in Facilities **Planning** form a master/strategic, campus and development site perspective	5	10	15	20	25	/25
The elements of ESD have been incorporated into the **Design and Construction** of facilities from concept design, construction, resource and conservation and materials selection perspective	5	10	15	20	25	/25
The materials of ESD have been incorporated into the **Maintenance and Operations** of facilities form the perspective of facilities operations and management and localized (user) responsibilities	5	10	15	20	25	/25
The elements of ESD have been incorporated into **Refurbishment and Demolition** of facilities	5	10	15	20	25	/25

Self-evaluation Towards Best Practices (Adopted form TEFMA, 2004)

Score (%)	Rating
Greater than 80	Best Practice
66-79	Good Practice
51-65	Average Practice
35-50	Below Average practice
Less than 35	Poor Practice

Table B: Abridged Example of the ESD Checklist

Item #	**Criteria** **Description of the activity to be assessed for no, partial or full implementation**	Score 0,1 or 2
	Planning **The following criteria refer specifically to the aspects of site planning from both a holistic (total campus) approach and for the selection of specific individual development**	
	Strategic and Site Planning and Direction	
	Has a strategic plan been developed addressing	
1	Definition of environmentally sensitive area etc	
2	Undeveloped areas for natural/green/landscape	
3	Cultural and heritage values	
	Development Site Planning	
	When considering future development are:	
25	Extensions to existing developments considered (both laterally and vertically)?	
30	Do users have simple access to basic services: medical from the development site?	
	Summary:	
	Planning Score (Sum all 30 items)	
	Benchmarking Planning Score: **For a planning score of: 0-12 = 5; 13-24 = 10; 25-36 = 15; 37-48 = 20 ; 49-60 = 25**	

Overall Assessment for Sustainability		
Planning Score (from above)		/25
Design and Construction Score (from above)		/25
Maintenance and Operation Score (from above)		/25
Refurbishment and Demolishing score (from above)		/25
Overall Sustainability Score (sum all scores)		/100

Towards Best Practices

The benchmarking survey developed and used by the members of the TEFMA and a small section presented here for possible use among higher education facilities in the Caribbean was in existence since the earlier 1980's. The survey now covers cost and performance data under twelve headings. In addition to these headings the survey also collects data on Strategic Asset Management (SAM); Space Management and Environmental Sustainable Development (ESD)-the focus of this paper. In 2002, 90% of the TEFMA members participated in the survey. The organization boasts that "The annual benchmarking survey has become one of the FM industry's most recognized and respected examples of collaborative benchmarking" (TEFMA website).

This much sought of survey is also used by the Higher Education Facilities Management Association (HEFMA) of Southern Africa among their members. The association has been surveying its members since 2004 and in the last survey in 2005 nine of its members participated. In their introduction to their members in the 2005Hefma Benchmarking Report, the writer notes that "The Australasian benchmarking project started out humbly and has since grown into an FM industry leading annual publication." An extract from the 2005 Hefma Benchmark Report is presented in appendix 3 as an example.

Two highly respected and recognized higher/tertiary education associations are perfecting the art of benchmarking in facilities management on two different continents. There is no need therefore for the Association of Caribbean Higher Education Administrators to reinvent the wheel. For the small section of the survey as presented here captures in essence what is needed to move towards benchmarking and best practices in sustainable facilities management. More so, it will assist the HEI that embarks on it to develop the campus of the future and hence enhance its competitive advantage.

Of course sustainable facilities management is no panacea for any problems we may encounter in our administrative functions pertaining to higher education facilities. In fact getting to best practice of 80% and above as indicated by the TEFMA model will be quite a formidable task. Using SFM however can provide some very key benefits; which also comes with some challenges. In summary a look at the benefits, challenges and solutions of implementing, measuring and benchmarking our practices in ecological sustainable development will be discussed.

Benefits, Challenges and Solutions

Higher education institutions in the Caribbean must position themselves as leaders and change agents in tackling the critical issues of sustainability. Climate change, oil dependencies etc are some of these issues that can be addressed through sustainable facilities management. An excellent place to begin SFM implementation and benchmarking is at our own HEI facilities. In this way we will begin to move towards achieving best practices thus demonstrating our commitment to our key stakeholders. In his introducing the Association for the Advancement of Sustainability in Higher Education (AASHE) Digest 2006- A Review of Campus Sustainability, Mr. Tom

Kimmerer Executive Director of AASHE concludes that “Campuses are laboratories of the future. It is fitting, then, that colleges and universities are taking the lead in society to a sustainable future.”

As an example and in keeping with Mr. Kimmerer’s profound comments is the mission statement of one of own higher education institution, the University of Technology-Jamaica, which states in part that “The School of Architecture aims to strategically improve the natural and built environment regionally and internationally….maintaining a commitment to the relentless pursuit of excellence using real world community as a classroom, this will be achieved….” It is quite fascinating to see that a real world classroom will be employed to attain improvement in the delicate balance between the natural and built environment (the point of SFM) by one of our own institutions. Ecologically sustainable development can be used at the UTECH to achieve this most important mission. An effective and efficient SFM at this University will provide that real world classroom they require. Even more so through benchmarking other regional and international institutions they will know if they are providing the best in class classroom for the Caribbean architectural program and of course for the potential leaders and decision makers of the Caribbean and beyond. What a golden opportunity to create a centre of excellence in sustainable practices in facilities management at the UTech, maybe a potential model of the campus of the future.

The figure below summarizes the benefits we will reap, the challenges we may encounter and some solutions to these challenges as we seek to lead society towards sustainable future.

Figure 5: Challenges, Solutions and Benefits of Sustainability (Adapted form TEFMA, 2004)

Benefits

- ✓ Growing cultural shift to sustainable practices
- ✓ Cost savings
- ✓ Increasing Executive support for sustainability
- ✓ Improved environmental performance
- ✓ Attracting funding for ESD projects
- ✓ Increased productivity and health
- ✓ More efficient resource use
- ✓ Excellent promotional tool (attract and retain students)

Challenges

- Lack of understanding
- Gaining managerial leadership
- Ineffective funding models
- Reluctance to adopt new ideas (hard to move form BAU)
- Long term benefits ignored because of intense competition from immediate priorities
- Can utilize some human resource

Solutions

- Continuous awareness programs
- Life-cycle funding basis-not just initial capital cost
- Implement user pays system
- Develop links between FM and academic programs
- Ensure ESD projects work and measure benefits

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Appendix 1:

Table1-A; Corporate Responsibility- The 3BL Approach (Adapted form TEFMA, 2004)
Corporate social responsibility accounts for the broader impact of an organization's operations on the global community
How does the adoption of CSR help Facilities Professionals • It is strategic to sustainability • It impact on values, morale, recruitment and development • It impact on image and reputation • It implies a more transparent process and a longer time frame of responsibility i.e. LCA • It reduces risk
Key Outcomes of CSR in Facilities Management • More efficient use of resources and therefore long term cost savings • Enhanced market place and community services and perceptions • Improved quality of relationships with key stakeholders • Sustainability outcomes can increase property value

Table 1-B: Some Economic Aspect of the ESD Model (Adopted form TEFMA, 2004)
Budget • Life cycle costing to evaluate relevant design and construction costs • Externalities need to be internalized and all impacts of a building accounted for
Income & Expenditure • Cost savings through waste minimization • Savings form improved space utilization • Cost savings through reduced consumption of resources • Funding for viable business cases for ESD projects
Employment Skills Base • Recognize current skills and transferable nature of these skills • Offer structured opportunities for employees to gain skills outside their normal area of expertise
Supply Chain Relationships • Minimization of waste through efficient and effective processes • Supply chain relationships are becoming important to help manage the environmental and social impacts caused by a company's actions and decision • Developing effective supply chain relationships are based on all those in the chain having the same vision –waste and energy minimization to be in the vision. Each company in the chain should be striving for sustainability and continual improvement

Table 1-C: Some Social Aspects of the ESD Model (Adopted from TEFMA, 2004)
Cultural Heritage • What are the heritage issues in the Caribbean? • In Grenada recently established heritage zone, TAMCC is within the zone
Access • In a tertiary education facility this is very important. Access to: all essential services; public transport; onsite campus accommodation • Access by the physically challenged. I had a tremendous task to make all available facilities accessible to a physical challenged student, including the upper floor of the library which did not have a lift.
Workplace • A part of implementing sustainability is creating a better workplace • Begins with planning through good design principles. Can we use natural ventilation and lighting? What toxins are we bringing into our work spaces through cleaning products, carpeting etc? • Clean indoor environment leads to increased productivity
Human Rights • Incorporating human rights into facilities management is as easy as being aware of the consequences of your own choices • Always consider the real cost of your products
Community Involvement and development • Include the community in the decision making process in all stages of the facilities management • Consider and include aspects in the project that will enhance community development
Stakeholder Inclusion • Stakeholder must be included at every stage of the building cycle • Stakeholders include client, planners, architects, designers, engineers, environmental mangers, energy specialists, service managers, operations and maintenance managers/personnel, government departments, plus those who will be affected by the project outcomes such as community members and building users • Communicate sustainability aspects through all areas of facilities management

Table 1-D: Some Environmental Aspects of the ESD Model (Adapted form TEFMA, 2004)

Indoor Environment Quality (IEQ) & Outdoor Air Quality

- IEQ is affected by choices made in materials used in the buildings and by internal building systems design-lighting, comfort, acoustics etc
- Outdoor air quality is affected by the quality and quantity of energy consumed in the building life cycle.
- Emissions and effluents form processes within building also affect the outdoor air quality

Energy

- Environmental performance of a building can be significantly improved by choosing most appropriate energy sources
- In the Caribbean renewable energy abounds and a call was made by a letter writer at the UTech Jamaica for Solar as backup at her facility
- Buildings also have embodied energy- that is the energy consumed form obtaining raw materials, to manufacture and transport.
- Embodied energy is a significant component of the life-cycle of a building and renovation and maintenance also add to a building's embodied energy over time
- To reduce embodied energy, design long-life, durable and adequate buildings. Also include local indigenous materials as far as a practical

Water

- Careful planning can reduce water consumption and contamination
- Elements that should be considered at the planning stage are: water demand, rainwater harvesting, storm water management, on-site water reuse, waterless or lo flow pans and urinals outdoor water ruse and appropriate landscape design

Land Use & ecology

- The genuses, species and ecosystems that comprise biological diversity provide resources and services that are essential to human life.
- Facilities managers can impact either directly or indirectly on the ecosystems based on the decisions they make
- Facilities Managers can ensure natural areas are maintained and enhanced and that the biological diversity is protected for future generations and long term sustainability

Waste

- If we consider waste as a misplaced product that directly affects the productivity of a facility (P = O/I+W), it is then possible to see the unlocked savings potential that we have not considered. The waste hierarchy below can save money:
- Avoidance

Appendix 2

Table 3-A: Develop ESD Performance Indicators for each aspect of the ESD Model Adapted from TEFMA, 2004)		
Economic Performance Indicators	Environmental Performance Indicators	Social Performance Indicators
Demonstrate: The manner in which an organization's economic interaction affects the stakeholders	Demonstrate: The impact an organization has on ecosystems, air land and water	Demonstrate: The impacts on stakeholders and the broader community at the local, national and global levels
Examples and indictors within the Facilities Management setting		
Examples Information Required: Significance of relationships with stakeholders and community Indicators • $/Supplier/pa • % Suppliers/area • Community Investment-$/pa • $/pa • Energy $/m^2 • Water $/m^2	Examples Information Required Impact of operations/activities on the environment Indicators • % recycled materials/m^2 • Energy kWH/m62 • Water kL/m62 • CO emissions/m^2 • % change in natural area due to operations and activities • % recycled product/pa • Waste tonne/pa	Examples Information Required Level of involvement with the community and employee satisfaction Indicators • Number of awards in ESD • % level of involvement with the community in ESD activities • % of student involvement in ESD activities in FM • % of involvement of FM in student research programs • Average hrs training • Absentee rates • 100% compliance with heritage legislation

Appendix 3: Benchmarking Example at Southern Africa Universities

Environmentally Sustainable Development (Actual Example taken form the 2005 HEFMA Benchmark Report)							
Institution	The elements of ESD have been incorporated in Facilities **Planning**….	The elements of ESD have been incorporated into the **Design and Construction** of Facilities …	The elements of ESD have been incorporated into **the Main and Operations** of facilities	The elements of ESD have been incorporated into **Refurbishment and Demolition**	2004 Survey Results	2005 Survey Results	**ESD Rating/Best Practice 80%**
	Maximum Score Available (=100)						
	25	**25**	**25**	**25**			
3	20	15	10	15	35	60	Average
2	5	15	15	10	39	45	Below Average
9	5	5	10	10	n/a	30	Poor