



THE UNIVERSITY OF THE WEST INDIES
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UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente

Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة

联合国环境规划署



REPORT of the AUDIT - Mainstreaming Environment and Sustainability in Caribbean Universities (MESCA)

July, 2011

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2. EXECUTIVE SUMMARY

This audit activity was conceptualized as a result of the Mainstreaming of Environment and Sustainability in Caribbean Universities (MESCA) workshop held at UWI, Mona in September, 2009, which was attended by thirty three participants from Caribbean universities. At this workshop, it was recommended that these universities should begin to mainstream sustainability concepts and practices in their university programmes and operations. It was felt that the first step would be to audit each university and report on their readiness for this. Accordingly, a project proposal was prepared for the audit exercise and funded by United Nations Environment Programme (UNEP). It was planned to take place during the first seven months of 2010.

It entailed the use of an audit tool, which was adapted from the Mainstreaming Environment and Sustainability in African Universities [MESA] instrument. This instrument had been developed for African universities. Representatives from six Caribbean universities collaborated to adapt this tool into a similar one for the Caribbean, Mainstreaming Environment and Sustainability in Caribbean Universities [MESCA] Audit Tool.

This report describes the procedures followed and gives both a summary and detailed description of the status of the universities collectively in the region, as resulting from the collation of reports received. Each individual report provides information useful to/needed by each university so that a comprehensive plan for further action may be prepared on the basis of the findings detailed within.

Only six of the eleven universities completed the audit process and submitted reports [University of Trinidad and Tobago, University of Technology, Northern Caribbean University, University of the West Indies represented by Mona and Cave Hill campuses, University of Belize]. University representatives reported challenges in obtaining completed audit reports, and in obtaining the data required, due primarily to the time of year during which the audit was carried out. Some also reported reluctance among persons to complete the forms as they had insufficient knowledge about the concepts involved.

Among the universities which reported in detail, the programme areas with fairly good 'sustainability successes' were teaching approaches and staff expertise and willingness which related to Part A; the greatest number of 'sustainability challenges' were in the sections on financial expenditure related to sustainability initiatives, human resources from Part B, and from Part C, student life. Management and conservation of waste, energy and water also were reportedly fairly low in focus at the different universities.

3. INTRODUCTION

3.1 Background

In order to address the present environmental, social and economic global crisis and so contribute to the creation of sustainable societies, it is imperative that universities in the Caribbean ensure that their education programmes and all their university operations are focused on sustainability concepts and rest on a foundation of sustainable development. Educational institutions are at the crux of sustainability issues and development, since their roles, though diverse, are essential; for these institutions are needed to produce students who will become citizens forming part of a just and sustainable society, and they are needed to provide research that will encourage economic growth, strengthen communities, and enable citizens to manage their delicate natural resources wisely. “Universities have the power to move their communities and countries to a more sustainable future that will provide prosperity today while ensuring that future generations have resources to meet their needs”. [*Presentation to Faculty Board, Feb, 2010, Collins-Figueroa & Down*]

3.2 Historical

Several recent meetings of United Nations Environment Programme (UNEP) have highlighted the need for strengthening the Caribbean presence within its programmes. Inspired by the programme *Mainstreaming Environment and Sustainability in African Universities (MESA)*, three Caribbean educators, Marceline Collins-Figueroa, Lorna Down (UWI, Mona) and Rachael Williams (UTT) contacted Professor Akpezi Ogbuigwe, Head, Environmental Education and Training at UNEP. With her support and advice, they produced a concept paper for MESCA which was submitted to UNEP. The prompt response of Professor Akpezi Ogbuigwe’s office, as well as that of the Director of the School of Education, UWI-Mona, Professor Zellynne Jennings-Craig, led to the funding from UNEP head office in Kenya for the workshop held at UWI Mona. This meeting, as conceptualized, was a regional scoping workshop for the development of the regional network for Mainstreaming Environment and Sustainability in Caribbean universities. In particular, thematic areas such as disasters and conflicts, environmental governance and climate change were considered as important to be infused into a wide range of disciplines in Caribbean universities. The MESCA workshop, which was hosted by UNEP and UWI, Mona, was held Tuesday, September 22 to Thursday, September 24, 2009 at Mona Visitors’ Lodge and Conference Centre, the University of the West Indies, Mona Campus, Jamaica, W.I. This initiative strongly supported the previously mentioned decisions at UNEP meetings, i.e., to continue activities of the Environmental Training Network and to expand the UNEP Regional Office for Latin America and the Caribbean’s (ROLAC) training in the region.

The workshop was expected to begin a movement in Caribbean universities, where ESD issues would become part of all programmes over the next five years. The group of participants considered a range of topics, such as:

- identification of possible themes and broad capacity development issues for MESCA
- identification of objectives, strategies and partnership protocols to be addressed by MESCA
- development of strategies for mainstreaming ESD
- development of embryonic plans for participants' work at their universities

Decisions coming out of this workshop included the agreement to conduct an audit of ESD at universities represented; to organize an on-line regional meeting to determine priorities; to create action plans for addressing mainstreaming of environment and sustainability in each university represented and to make individual commitments in the form of pledges. Thus, the organizing group put forward the proposal for an audit of the Caribbean universities, to report on the status of environment and sustainability concepts and practices within each one. This audit was scheduled to take place between March and July of 2010. UNEP agreed to fund the activity, and a contract was drawn up between UNEP and UWI, Mona (as implementing agency) for this purpose.

4. OBJECTIVES & SCOPE FOR THE AUDIT

4.1 Objectives

The objectives of this audit exercise were as follows: (a) to identify the extent to which sustainability issues, concerns and practices are part of the universities' programmes and operations; and (b) to provide a basis for action plans that will address the issue of sustainability in these universities.

It is intended that the audit reports may be used as a baseline so universities would have information about their strengths, and weaknesses, and they may be used for comparisons over time and across the region. It is also expected that it should raise awareness of sustainability concerns and concepts among those audited.

4.2 Scope of audit exercise

This review was planned to encompass 11 universities in totality, seven from three islands in the English speaking Caribbean, one from a Caribbean territory, i.e. Haiti, and three universities

from mainland Central American countries. However, due to a number of factors, including the unfavourable time of year during which this was to be carried out, as well as the work load of the contact persons involved, only six universities completed the audit process over a period of two years.

4.3 Concepts of sustainability

In this exercise, sustainability in terms of education is considered as that form of education which engages students in content and practice with sustainability issues. Such education will give students knowledge and expertise of how to use the natural resources of earth more efficiently, of how to create just and peaceful societies, and the appreciation that man and nature form one holistic system. As such, students are enabled to attend ethically to environmental, social (including cultural) and economic problems. It is also expected that students will live sustainable life-styles, will give service to their communities, and develop their ability to think critically for the future. Sustainability, in terms of university management and operations, promotes 'green' practices that take into account the environment, the society (including culture) and the economy to ensure safe, just and efficient operations and community well-being.

4.4 The universities

Six universities completed their audit exercise. Short descriptions of each one follows.

University of Trinidad and Tobago (Trinidad & Tobago) – UTT - is fairly new, being established in 2004 from an amalgamation of several different institutions. It has three schools, within which are various centres, academies and several institutes which fall under the aegis of the School of Postgraduate Studies, Research & Development. Four centres are focused on technologies (from ICT to biotechnology). Education, Performing Arts, Leisure Studies and Sports are other academic areas. The main focus of all centres is to combine institutional learning with relevant practical field experience with a mandate to produce a highly trained technological manpower base for the country. The centres are sited on 19 sites/campuses with two more currently under construction. There are approximately 7000 students currently enrolled.

Northern Caribbean University (Jamaica) – NCU - has been a university since 1999, previously having been a college offering a variety of courses up to 12th grade. It has several faculties, and is now developing fully into a university. As it is a Seventh Day Adventist church founded and run institution, sustainable development in terms of individual, community and country awareness and stewardship appears to be high on its agenda. Its campus in Jamaica covers some 200 acres, with 4,500 students currently enrolled.

University of Technology (Jamaica) – UTECH - has been a university since 1995, primarily focused on technology oriented degrees and courses and is modeled as a polytechnic university. There are six faculties, five of which participated in the study. The faculty of Law is the newest faculty, and no data was obtained from this one. UTECH was previously a polytechnic college, College of Arts, Science and Technology, (CAST) since 1958. There are some 11,000 students enrolled.

University of the West Indies, Mona (Jamaica) - UWI has been a university since 1962, and was previously a College affiliated with the University of London since 1948. It currently has five faculties, together with a number of institutes and specialized schools. Since 2008, it has extended its services to Western Jamaica. (However, this campus was not included in the audit.) With some 15,000 students, this is the largest of the universities that participated in the audit exercise.

University of the West Indies, Cave Hill (Barbados) - this campus, with its own separate principal, and five faculties, has been in operation since 1963, with the opening of the College of Arts and Sciences. In 1967 it moved to its present campus at Cave Hill, overlooking the island's capital, Bridgetown, a few miles away. After the establishment of the Faculty of Law in 1970, it became known as the Cave Hill campus of the UWI. Currently there are approximately 9,000 students enrolled in the faculties and five research units/centres.

University of Belize - At just over ten years old, the University of Belize is a relatively new tertiary institution that is regarded as the country's national university. Offering over 50 degree programmes from its four faculties at some five locations across the country, UB caters well to its nearly four thousand student population. Among its many offerings, of note is the full Bachelors degree in Natural Resources Management, and for its very first ever, as a graduate degree course, UB has partnered with several regional universities to offer a Masters degree in Biodiversity.

5. DESIGN OF THE AUDIT TOOL AND THE PROCESS EMPLOYED FOR DATA COLLECTION

5.1 Development of the tool:

The audit tool used mainly the structure of one developed by the Mainstreaming of Environment and Sustainability in African Universities (MESA). Several areas were modified based on a number of discussion sessions, one being an online meeting attended by persons from six Caribbean universities. Recommendations from these discussions were used to finalize its use in the various universities. The audit tool report will serve as both a documentation of findings and a basis for future action.

5.2 Description of the tool:

The tool is comprised of three sections:

Part A : focusing on teaching and research, designed to be used at departmental level;

Part B : on university management and operations, to be used with the Administration, and

Part C : on student involvement.

Each part had a number of indicators, to which respondents were required to give a score accompanied by comments for each. The scores were explained in a rating scale at the start of each part, as seen below:

Assessment Indicator Rating Scale	
Score	
X	= Don't know/no information concerning this
0	= None/there is total lack of evidence on this indicator
1	= A little/evidence shows poor performance
2	= Adequate/evidence shows reasonable performance
3	= Substantial/evidence shows good performance
4	= A great deal/excellent performance

[The entire tool is attached as Appendix i]

5.3 Data collection

Various strategies were employed at the different universities to create awareness and gain acceptance of the audit process. Efforts were made to obtain information from the range of departments, faculties or centres at each university, especially for Part A. In several of the universities, the university representative on MESCA received assistance from one/more post graduate students in obtaining or collating the data.

For Part A, at UTT, the audit instrument was sent via email to 18 programme heads. This was followed by a powerpoint presentation which explained the background and the purpose of the audit exercise. At UWI- Mona, a presentation was made to the University's Academic Board, as well as an electronic notice posted on the messaging system. Each academic department was

provided with a package containing an introductory letter and copies of the tool for each lecturer. Department Administrators were also briefed. At UTECH, data was obtained from the Vice deans, as these were responsible for information on programmes. NCU did not indicate how many different units/departments had provided the information. At UB, it was administered at the level of the Academic Council of the University of Belize. At UWI, Cave Hill, information that was needed from the Academic Staff to complete Part A was sent through emails to fifteen (15) Academic heads (Programme directors, Deans and Heads of Department) from all faculties on campus. However, only two complete reports were finally received: from Humanities and Education, and the Center for Resource Management and Environmental Studies (CERMES).

In Part B, the administrative departments included varied in the different universities; for example at UTECH, Vice Presidents of Planning and Development, the Assistant Registrar for Students' Services, Director of Human Resources, Director of Facilities Development, Director of Public Relations and the Manager of UTECH's Enhancement Project were all interviewed. At UWI-Mona, no less than twenty-four different units provided information for this section; while at UTT, information was obtained from two different units. Data presented from NCU did not indicate how many different units/departments had provided the information. Personal and follow up visits were employed in the data collected at UWI-Cave Hill and resulted in receipt of information from six departments.

In the case of Part C, convenience sampling was employed in all six universities. Some six hundred students across the six universities participated in the survey.

5.4 . Scoring.

Each indicator was rated by the relevant respondent on the rating scale (See section 5.2). Generally, in descriptive terms, it was considered that a score of 3-4 was good, 2-3 was reasonable, and below 2 was considered poor. Comments were included by some respondents for specific indicators; while other respondents commented in general on the scores. These comments may be seen in appendix ii, which contains complete reports from each university.

6. FINDINGS

6.1 Collation of results.

For Part A of the tool, the results from each university were used, and arithmetic means calculated *for each faculty/centre/school of four of the universities* for each indicator, and for each sub-section, and then quantified as percentages to provide an overall comparable summary. For this part, in particular, it was considered most useful to report on the results according to faculty/centre/school. Two universities provided general summary scores for each indicator, not broken down by faculty, with each indicator being fairly high.

For Parts B and C, the results were reported for two of the six universities for each faculty/centre/school. It would have been difficult to compare results across the four universities if two had results from several sub-sections and the other four did not have this. Therefore in these sections, the results have been generalized (using means) for each of these universities, in order to make the final results more comparable. It must be noted that uniformly, one university had fairly high results for each indicator; perhaps this skewed the overall totals to an extent.

The reporting format of tables is copied from the MESA audit report, with information summarized in two ways: (i) as means, totals and percentages for each area in the instrument for *each university's faculty or centre*, as well as (ii) means, totals, and percentages for *each indicator*. This provides generalized information, providing information per indicator as well as information specific to each university faculty or centre for that entire sub-set of indicators. Several comparisons may thus be made.

6.2 Collated Reports of Scores

Part A. Teaching, Research and Community

Scores for Part A according to faculty/centre for four universities: UTECH, UTT, UWI Mona and UWI Cave Hill, and for two other universities which did not delineate scores according to faculty/centre. (Each indicator has a maximum score of 4). The two universities which had scores that were not delineated according to faculty/centre and were uniformly high (3,4) were NCU and UB. *Due to the inclusion of these two universities, the scores were slightly higher than the earlier report (August 2010).*

Table 1. Curriculum: this relates to 8 different indicators (see Appendix)

	C1	C2	C3	C4	C5	C6	C7	C8	TOT Score	% of total max score	Mean
UTT Design & Manufacturing	2	0	0	3	3	4	0	0	12	37	1.5
Environmental Science	3	3	3	2	3	2	3	3	22	69	2.75
Cognition, Learning, Education	3	1	0	2	1	1	1	1	10	31	1.25
Petroleum Engineering	1	0	0	0	0	0	0	0	1	3	0.12
Performing Arts	0	0	0	0	0	0	0	0	0	0	0
Criminology	3	3	0	3	4	0	3	3	19	59	2.37
Bioscience, Agriculture & Food Technology	3	4	0	4	4	4	2	1	22	69	2.75
UWI Mona Pure & Applied Science	1.6	2	1	1.2	2.3	1.8	2.6	1.5	14	44	1.75
Medicine	1.4	2.67	0.75	1.4	1	1.5	1.67	0.5	10.9	34	1.36
Humanities & Education	1.33	1.38	0.5	1	1.71	1.67	1.3	0.4	9.29	29	1.16
Institute for SD	4	3.5	3	4	1.5	3.5	3.5	4	27	84	3.37
Social Science	2.5	2	0	1	4	3	1	0	13.5	42	1.68
UTECH Engineering, Computer	1	1	0	1	2	1	0	0	6	19	0.75
Business Admin.	1	1	0	0	0	0	0	0	2	6	0.25
Education & Liberal Studies	2	2	0	2	2	2	1	1	12	37	1.5
Health & Applied Sciences	3	3	2	4	4	4	3	3	26	81	3.25
Built Environment	3	2	0	0	3	2	3	2	15	47	1.87
UWI Cave Hill Humanities & Education	2	2	2	x	x	x	x	0	6	18.75	0.75
CERMES	4	4	4	4	4	4	4	x	28	87.5	3.5
NCU	4	3	3	4	4	3	4	4	29	9.6	3.6
University of Belize	4	4	4	4	3	2	3	4	28	87.5	3.5
TOTAL	49.83	44.55	23.25	41.6	47.5	40.47	37.07	28.4			
%	59.3	53	27.67	49.5	56.5	48	44.1	33.8			
MEAN	2.37	2.1	1.1	1.98	2.26	1.90	1.76	1.32			

Note here that the indicators with the highest scores overall were C1 and C5, which relate to accessibility of courses and offering of courses focused on sustainability. The indicator with the lowest score was C3, which asked about the existence of an inter-disciplinary degree program or course on sustainability.

Three university departments which scored highly in this section were the Health & Applied Sciences faculty of UTECH; the Institute of Sustainable Development of UWI-Mona (this latter was expected since sustainable development research is the core business of this institute); and UWI-Cave Hill's CERMES, which also focuses on sustainable development research.

Table 2. Teaching Approach: Three indicators are reported here, with T9 being sub-divided into 5 sub-sections.

	T9a	9b	9c	9d	9e	T10	T11	TOT	% of total max score	Mean
UTT Design & Manufacturing	0	0	0	0	0	0	0	0	0	0
Environmental Science	3	2	2	2	2	3	3	17	61	2.42
Cognition, Learning, Education	3	3	3	3	3	3	3	21	75	3
Petroleum Engineering	2	3	3	2	-	3	2	15	54	2.14
Performing Arts	4	4	4	4	4	4	4	28	100	4
Criminology	0	0	0	0	0	3	4	7	25	1
Bioscience, Agriculture & Food Technology	2	3	-	3	3	3	4	18	64	2.57
UWI Mona Pure & Applied Science	3.17	3.17	3.17	2.17	2.5	2.67	2.33	19	68	2.71
Medicine	3.33	3.17	3.5	3.33	3	2.83	3	22	78	3.14
Humanities & Education	2.9	3.18	2.9	3.5	2.8	2.5	2.73	20.5	73	2.92
Institute for SD	3.5	3.5	3	3.5	3	3.5	3.5	23.5	84	3.35
Social Science	3	3.67	3.67	3.67	3.67	3	3	23.6	84	3.37
UTECH Engineering, Computer	3	3	3	2	3	2	3	18	64	2.57
Business Admin.	2	1	1	1	1	2	2	10	36	1.42
Education & Liberal Studies	3	3	3	3	3	3	3	21	75	3
Health & Applied Sciences	3	3	3	3	3	3	3	21	75	3
Built Environment	2	2	2	2	2	3	3	16	57	2.28
UWI Cave Hill Humanities & Education	3	3	3	3	3	3	3	21	75	3
CERMES	4	4	4	x	4	3	4	23	82.1	3.28
NCU	3	3	3	3	3	4	3	22	78.5	3.14
University of Belize	4	3	3	2	3	3	3	21	75	3
TOTAL	56.9	56.69	53.24	49.17	51.87	58.5	61.56			
% of total max score	67.7	67.4	63.4	58.5	61.8	67.2	73.28			
MEAN	2.66	2.69	2.5	2.3	2.47	2.69	2.9			

This was almost the highest scoring section of the entire audit tool, second only to the section on staff expertise and willingness.

The highest indicator score across the departments/faculties and universities was T11, which dealt with the teaching approach as preparing students for life in a diverse world. Next highest score was T 9(b), which addressed the teaching approach preparing students' critical thinking skills well. Interestingly, the lowest score here was T 9(e), which asked whether the teaching approaches assisted in developing students' problem solving skills *re community problems*.

Among the university departments which scored highly here was the Performing Arts centre of UTT.

Table 3. Teaching Resources: Three indicators are included here.

	TR 12	TR 13	TR 14	TOT	% of total max score	Mean
UTT Design & Manufacturing	1	2	0	3	25	1
Environmental Science	3	2	2	7	58	2.33
Cognition, Learning, Education	0	1	1	2	17	0.66
Petroleum Engineering	0	0	0	0	0	0
Performing Arts	0	4	0	4	33	1.33
Criminology	0	3	1	4	33	1.33
Bioscience, Agriculture & Food Technology	1	1	1	3	25	1
UWI Mona						
Pure & Applied Science	1.6	3.2	2.2	7	58	2.33
Medicine	1.33	2.67	1.6	5.6	47	1.86
Humanities & Education	0.83	2	1.56	4.39	36.58	1.46
Institute for SD	1	3.5	3.5	8	66	2.66
Social Science	1	2.67	2.33	6	50	2
UTECH						
Engineering, Computer	2	0	0	2	17	0.66
Business Admin.	1	2	2	5	42	1.66
Education & Liberal Studies	0	3	3	6	50	2
Health & Applied Sciences	2	2	3	7	58	2.33
Built Environment	1	2	2	5	42	1.66
UWI Cave Hill						
Humanities & Education	0	1	0	1	8.3	0.33
CERMES	4	4	4	12	100	4
Northern Caribbean University	3	3	3	9	75	3
University of Belize	3	3	3	9	75	3
TOTAL	26.7	47.04	35.19			
% of total max score	31.85	56	43.08			
MEAN	1.27	2.24	1.72			

It is an excellent indication of the international scope of these universities, that the highest score was found in TR 13 (collaboration with other universities). The lowest score was received by TR 12, which dealt with staff development opportunities or rewards available for sustainability initiatives.

In this section, there were several reasonable scores reported from the Environmental Science and Management Programme at UTT, Health and Applied Science faculty at UTECH, and Pure and Applied Science faculty at UWI. Fairly high scores were reported from UWI-Cave Hill's CERMES, from NCU and UB.

Table 4. Research & Scholarship: there are four indicators.

	R 15	R 16	R 17	R 18	TOT	% of total max score	Mean
UTT Design & Manufacturing	3	3	0	0	6	37	1.5
Environmental Science	3	2	1	1	7	44	1.75
Cognition, Learning, Education	1	1	0	0	2	12	0.5
Petroleum Engineering	0	1	0	0	1	6	0.25
Performing Arts	0	0	0	0	0	0	0
Criminology	3	2	1	3	9	56	2.25
Bioscience, Agriculture & Food Technology	2	2	1	1	6	37	1.5
UWI Mona Pure & Applied Science	3	2.33	2.4	2.67	10.4	65	2.6
Medicine	0.75	2.5	1	0	4.25	26	1.06
Humanities & Education	1.88	1.9	0.71	0.7	5.19	32	1.29
Institute for SD	4	3.5	4	4	15.5	96.8	3.87
Social Science	1.33	2	0.5	1	4.83	30	1.2
UTECH Engineering, Computer	n/a	1	0	1	2	12	0.5
Business Admin.	n/a	0	0	0	0	0	0
Education & Liberal Studies	n/a	1	0	0	1	6	0.25
Health & Applied Sciences	n/a	2	1	0	3	19	0.75
Built Environment	n/a	2	1	0	3	19	0.75
UWI Cave Hill Humanities & Education	0	0	0	0	0	0	0
CERMES	4	4	4	4	16	100	4
Northern Caribbean University	4	4	3	3	14	87.5	3.5
University of Belize	3	3	3	2	11	58.75	2.75
TOTAL	33.63	40.23	23.61	23.37			
% of total max score	40.03	48	28.1	27.8			
MEAN	1.6	1.9	1.12	1.11			

While the scores in this section could be far higher, and were indeed surprisingly low in some areas, the highest indicator score was R 16 (collaboration with other institutions in solving problems), and the next highest was R15, which described staff involvement in research. The indicator with the lowest score was, understandably, R 18 which addressed the existence of research institutes.

Here, the best performers were NCU, UWI-Cave Hill's CERMES, UB, and the Institute of Sustainable Development at UWI-Mona.

Table 5 Service Activities

	S 19	S 20	S 21	TOT	% of total max score	Mean
UTT Design & Manufacturing	0	0	0	0	0	0
Environmental Science	2	3	3	8	67	2.66
Cognition, Learning, Education	1	1	1	3	25	1
Petroleum Engineering	0	0	0	0	0	0
Performing Arts	0	0	0	0	0	0
Criminology	2	1	3	6	50	2
Bioscience, Agriculture & Food Technology	2	3	3	8	67	2.66
UWI Mona						
Pure & Applied Science	2.5	2.67	2.17	7.34	61	2.44
Medicine	1.6	1.6	1.5	4.7	39	1.56
Humanities & Education	1.25	1.63	0.86	3.74	31	1.24
Institute for SD	3.5	3.5	3.5	10.5	87	3.5
Social Science	3	2	2	7	58	2.33
UTECH						
Engineering & Computer	1	1	1	3	25	1
Business Administration	1	1	1	3	25	1
Education & Liberal Studies	1	1	1	3	25	1
Health & Applied Science	2	3	3	8	67	2.66
Built Environment	2	3	3	8	67	2.66
UWI Cave Hill						
Humanities & Education	1	1	3	25		1
CERMES	3	4	3	10	83.3	3.33
Northern Caribbean University						
	4	4	4	12	100	4
University of Belize						
	3	3	3	9	75	3
TOTAL	36.85	40.4	40.03			
% of total max score	43.8	48.09	47.6			
MEAN	1.75	1.92	1.90			

The service area had scores that were just above poor performance; the highest score being S20, which spoke to staff being involved in research and service activities in this area. The two universities with high scores were NCU and UB.

Departments which out-performed others included Bioscience, Agriculture, & Food Technology from UTT, Health and Built Environment at UTECH, the Institute of Sustainable Development at UWI-Mona and CERMES at UWI-Cave Hill.

Table 6. Staff Expertise and Willingness

	E 22	E 23	E 24	TOT	% of total max score	Mean
UTT Design & Manufacturing	4	4	4	12	100	4
Environmental Science	2	3	3	8	75	2.6
Cognition, Learning, Education	1	0	0	1	8	0.33
Petroleum Engineering	0	1	2	3	25	1
Performing Arts	0	0	0	0	0	0
Criminology	1	4	4	9	75	3
Bioscience, Agriculture	3	4	4	11	92	3.6
UWI Mona						
Pure & Applied Science	2.67	2.83	3	8.5	71	2.8
Medicine	1	1.75	2.33	5.08	42	1.69
Humanities & Education	2.71	2.57	2.43	7.71	64	2.57
Institute for SD	4	4	4	12	100	4
Soc Science	1.67	2	2.33	6	50	2
UTECH						
Engineering & Computer	3	3	3	9	75	3
Business Administration	1	3	3	7	58	2.3
Education & Liberal Studies	1	3	3	7	58	2.3
Health & Applied Science	3	3	3	9	75	3
Built Environment	3	3	3	9	75	3
UWI Cave Hill						
Humanities & Education	1	1	1	3	25	1
CERMES	4	4	4	12	100	4
NCU	4	3	4	11	91.6	3.66
University of Belize	4	4	4	12	100	4
TOTAL	47.05	56.15	59.09			
% of total max score	56	66.8	70.3			
MEAN	2.24	2.67	2.8			

This area scored highest of all in Part A overall, and provides great hope and expectations that this movement will be successful. The highest indicator score was E 24, which described the staff's willingness to teach sustainability topics, and next highest was E 23, which evaluated the staffs' willingness to do research.

Highest scoring departments were two centres at UTT – (i)Design and Manufacturing and (ii) Bioscience, Agriculture & Food Technology, as well as the UWI-Mona's Institute for Sustainable Development, UWI-Cave Hill's CERMES and UB.

Part B. University Management & Operations.

In this part, the universities obtained their information in varied ways, some using questionnaires across faculties/centre, while others interviewed individuals from different departments in the administrative sections. These individual results have been collated for each university and are included in the tables in this part.

Scores for Part B from six universities: UTECH, UTT, UWI Mona, UWI Cave Hill, NCU and UB. (Each indicator has a maximum score of 4) It is noted that in this section, NCU in general had the highest scores across most areas and indicators.

Table 7. Planning & Coordination

	P1	P2	P3	P4	P5	P6	Total	% of total max score	Mean
UTT	1.5	2	1.5	0.5	1	0.5	7	29	1.16
UWI Mona	2.23	2.38	2.57	1.76	1.43	0.75	11.12	46.3	1.85
UTECH	-	2	3	3	2	1	11	45.8	1.83
NCU	2	3	4	3	3	2	17	70.8	2.8
UWI Cave Hill	2.1	2.14	2.5	1.1	2.5	1.33	11.67	48.6	1.94
Univ. of Belize	4	3	3	x	3	3	16	66.6	2.66
TOTAL	11.83	14.52	16.57	9.36	12.93	8.58			
% of total max score	49.3	60.5	69	39	53.8	35.7			
MEAN	1.97	2.42	2.76	1.87	2.15	1.43			

The highest scoring indicator in this section was P 3, which asked if the objectives of the university's strategic and operational plans addressed all dimensions of sustainability. The next highest was P2, which dealt with matter of the universities' policies paying attention to principles of sustainability.

Table 8. Human resources

	HR 7	HR 8	HR 9	HR10	HR 11	HR12	Total	% of total max score	Mean
UTT	0	0.5	1.5	1.5	0	0	3.5	14.58	0.58
UWI Mona	1.15	1.08	1.07	1.92	1.07	1.89	8.18	34	1.36
UTECH	0	0	2	2	1	2	7	29	1.16
NCU	3	3	3	3	3	3	18	75	3
UWI Cave Hill	0.5	0.5	1.66	2.10	2.10	2.40	9.36	39	1.56
U of Belize	2	2	2	3	3	3	15	62.5	2.5
TOTAL	6.66	7.18	11.23	13.35	1.17	12.29			
% of total max score	27.7	29.9	46.7	55.2	42.3	51.2			
MEAN	1.11	1.19	1.87	2.22	1.69	2.05			

This was one of the areas with low scores. The lowest score here was HR 7, orientation given to new staff on sustainability. The highest scoring indicator here was HR 10, which covered the existence of staff compensation programmes.

Table 9. Buildings & Grounds

	B 13	B 14	B 15	Total	% of total max score	Mean
UTT	1.5	1.5	1.5	4.5	37.4	1.5
UWI Mona	2.15	1.35	2.54	6.04	50.33	2.01
UTECH	1	1	3	5	41.66	1.66
NCU	3	3	4	10	83.3	3.33
UWI Cave Hill	1.86	1.6	2.33	5.79	48.25	1.93
U of Belize	3	1	3	7	58.33	2.33
TOTAL	12.51	9.45	15.37			
% of total max score	52.1	39.3	68.2			
MEAN	2.08	1.57	2.73			

Here, the highest scoring indicator was B 15, which related to sustainable landscaping practices, while the lowest referred to maintenance and operational practices being eco-friendly.

Table 10. Waste management

	W16	W17	W18	W19	W20	Total	% of total max score	Mean
UTT	1	1.33	1	1.33	0.66	5.32	26.6	1.06
UWI Mona	1.33	1.56	2.19	2.38	0.83	8.29	39	1.65
UTECH	1	1	1	1	2	6	30	1.2
NCU	3	2	3	3	3	14	70	2.8
UWI Cave Hill	1.25	2.42	1.38	1.8	0.6	7.45	37.25	1.49
U of Belize	0	0	3	x	0	3	15	0.6
Total	7.58	8.31	11.57	9.51	7.09			
% of total max score	31.5	34.6	48.2	39.6	29.5			
Mean	1.26	1.38	1.92	1.90	1.18			

In this section, the highest scoring indicator related to liquid waste being treated or reduced, while the lowest score was W 20, re waste audits being carried out.

Table 11. Energy Management

	EM 21	EN 22	EM 23	Total	% of total max score	Mean
UTT	0.33	1	0.66	2	16	0.66
UWI Mona	1.23	2.04	1.89	5.46	45.5	1.82
UTECH	1	1	3	5	41.6	1.66
NCU	2	3	4	9	75	3
UWI Cave Hill	1	2	2.4	5.4	45	1.8
U of Belize	0	1	0	1	8.3	0.33
Total	5.56	10.04	11.95			
% of total max score	23.1	41.8	49.8			
Mean	0.92	1.67	1.99			

Here, with fair to poor performance, was one redeeming factor - audits were performed for this area. There is room for improvement here in all universities, except NCU.

Table 12 Water Management

	WM 24	WM 25	WM 26	Total	% of total max score	Mean
UTT	0.66	0.66	0.66	1.98	16.5	0.66
UWI Mona	1.56	1.83	0.79	4.18	34.8	1.39
UTECH	2	2	3	7	58	2.33
NCU	3	2	2	7	58	2.33
UWI Cave Hill	1.75	1.66	1.25	4.66	38.8	1.55
U of Belize	1	2	0	3	25	1
Total	9.97	10.15	7.7			
% of total max score	41.54	42.29	32.1			
Mean	1.66	1.69	1.28			

With recent droughts experienced throughout the Caribbean, it might be assumed that most universities are well aware of the necessity for good water management. It is therefore good to note that the highest scoring indicator in this section was WM 25, which referred to conservation practices for storm water. However, with WM 26 being the lowest scoring indicator of the three, which asked about *audits of water consumption*, this is an area which could be greatly improved.

Table 13. Financial Aspects

	F 27	F 28	F 29	Total	% of total max score	Mean
UTT	0	0	0	0	0	0
UWI Mona	1.8	1.23	1.4	4.43	36.9	1.47
UTECH	0	0	-	0	0	0
NCU	3	3	3	9	75	3
UWI Cave Hill	2	1.66	2.5	6.16	51.3	2.05
U of Belize	1	0	0	1	8.33	0.33
Total	7.8	5.89	6.9			
% of total max score	32.8	24.54	28.75			
Mean	1.3	0.98	1.15			

This was the lowest scoring section of the entire tool. The highest scoring indicator of the three above was F 27, addressing the percentage of investment spent on sustainability research. This was boosted by the high scoring NCU, which has a policy on this very area. Two of the universities indicated a total lack of information on this area.

Table 14. Public Engagement

	PR 30	PR 31	Total	% of total max score	Mean
UTT	0	0	0	0	0
UWI Mona	1.84	2.28	4.12	51.5	2.06
UTECH	2	3	5	62.5	2.5
NCU	4	4	8	66.6	4
UWI Cave Hill	2.66	1.66	4.32	54	2.16
U of Belize	2	1	3	37.5	1.5
Total	12.5	11.91			
% of total max score	52.08	49.6			
Mean	2.08	1.98			

The highest score here was PR 30, which asked if the university utilized community partnerships in relation to sustainability topics and issues.

Table 15. Diversity

	D 32	D 33	D 34	Total	% of total max score	Mean
UTT	2	3	1	6	50	2
UWI Mona	2.54	2.7	2.52	7.76	64	2.58
UTECH	1	2	2	5	41.6	1.66
NCU	4	3	4	11	91.6	3.66
UWI Cave Hill	2	2	2.33	6.33	52.75	2.11
U of Belize	4	3	4	11	91.6	3.66
Total	15.54	15.7	15.85			
% of total max score	64.75	65.4	66.04			
Mean	2.59	2.6	2.64			

In this section, with just three indicators, the highest scoring one was D 34, which addressed the existence of assistance for under-represented groups. This is a positive indication, with all the universities showing fairly good performance here.

Part C. Students. In this part, the universities obtained their information from students in varied ways, some across faculties/centre, while others used individuals in particular areas. The individual results have each been collated for each university and included in the tables in this part. The university scoring highest was NCU, with UB a close second.

Scores for Part C for four universities: UTECH, UTT, UWI, NCU (Each indicator has a maximum score of 4)

Table 16. Student Life

	SL 1	SL 2	SL 3	SL 4	Total	% of total max score	Mean
UTT	1	0	0	1	2	12.5	0.5
UWI, Mona	1.77	1.87	1.85	1.71	7.2	45	1.8
UTECH	1	1	2	1	5	31	1.25
NCU	3	3	3	2	11	68.75	2.75
UWI, Cave Hill	0.53	0.48	0.49	1	2.5	15.6	0.62
U of Belize	2	x	x	0	2	12.5	0.5
Total	9.3	6.35	7.34	6.71			
% of total max score	38.75	26.45	30.58	27.95			
Mean	1.55	1.27	1.46	1.11			

Interestingly, this entire section was one of the lowest scoring areas in the entire audit. The highest scoring indicator here was SL 1, which related to the existence of orientation programmes in the area of sustainability.

Table 17. Student Organization & Governance

	SG 5	SG 6	SG 7	SG 8	Total	% of total max score	Mean
UTT	2.5	2	2.5	1.5	8.5	53.12	2.12
UWI, Mona	1.96	1.85	1.86	2.33	8	50	2
UTECH	2	3	1	4	10	62.5	2.5
NCU	3	3	1	4	11	68.75	2.75
UWI, Cave Hill	0.87	1.03	0.83	1.64	4.37	27.3	1.09
U of Belize	3	4	4	3	14	87.5	3.50
Total	13.33	14.88	11.19	16.47			
% of total max score	55.54	62	46.6	68.6			
Mean	2.22	2.48	1.86	2.75			

Here the highest scoring indicator was SG 8 which referred to voluntary community service by students. The lowest scoring indicator was SG 7, which asked about the existence of student groups with an environmental/sustainability focus. This was a surprising result, although it is tempered by the comments made which mentioned that the student groups, although not *focusing* on these areas, do include them.

Table 18. Student Learning Outcomes

	SO 9	SO 10	SO 11	SO 12	SO 13	Total	% of total max score	Mean
UTT	1.5	1.5	2.5	3	2.5	11	55	2.2
UWI, Mona	2.02	1.87	1.69	1.81	1.72	9.11	45.5	1.8
UTECH	0	-	0	3	3	6	30	1.2
NCU	3	3	3	4	3	16	80	3.2
UWI, Cave Hill	1.48	0.91	1.19	1.27	1.29	6.14	30.7	1.23
U of Belize	3	2	2	3	4	14	70	2.8
Total	11	9.28	10.38	16.08	15.51			
% of total max score	45,8	38.8	43.25	76	64.62			
Mean	1.83	1.54	1.73	2.68	2.58			

Some of these results corroborate some results from the teaching approach section, as the highest scoring indicator was seen to be SO 12, which addressed students developing technical skills and expertise needed to implement sustainable solutions. However, a less positive result is noted in the lowest score for SO 10, which asked about students using ethical perspectives.

6.3 Summary of Comments reported from audit tools

6.3.1 Part A

Curriculum

UTT reports that there appears to be a fair focus on sustainability in four centres/schools. Of the centres, the programmes of one - Environmental Science & Management is focused on sustainable development. At UTECH, most courses of study/many modules cover aspects in terms of education for sustainable development. However, the problem is that the courses are disjointed and thus 'fail to be a force to reckon with in terms of fostering sustainable development' (A. Ishemo, *UTECH MESCA report, 2010*). This appears to be similar to the status at UWI- Mona, where the various faculties scored this section very low, except for the Institute for SD. In one of the other institutes at UWI-Mona, Caribbean Institute of Media and Communication(CARIMAC), it was noted that "sustainability related issues form part and parcel of the core curriculum. There is, however, a need for more or better focus on 'green' practices and climate change". "Issues of sustainability feature prominently at UB. As part of their general education core requirements, virtually all students are required to take an environmental course entitled 'Environment, Conservation and Development.'" (*U of Belize MESCA audit report, July 2011*) The institution offers a full Bachelors degree in Natural Resources Management, and for its very first ever graduate degree course, UB has partnered with several regional universities to offer a Masters degree in Biodiversity. There is also an interdisciplinary degree in sustainability studies.

At UWI-Cave Hill, there are programmes in Heritage Studies (an MA programme) and Environmental Ethics (not usually offered) within the Faculty of Humanities and Education. Their Centre for Research and Environmental Management (CERMES) is, in fact, a research institute that studies issues and aspects related to sustainability.

Additionally, at UTECH, the concept of sustainability does not appear to be considered when projects or internships arise. Despite collaborations between UTECH programmes with other universities' programmes, little research on sustainability is carried out by staff members. Heavy teaching loads and lack of financial resources are said to be the cause. At UWI-Mona, it was mentioned that two courses in CARIMAC – Communication Analysis and Planning 1 and 2, do, in fact, incorporate research in areas of sustainability.

Accessibility of courses was mentioned at both NCU and at UWI-Mona, where at the former university, it appears that courses are fairly easily accessible, with many being offered online, while at the latter university, the situation is considered 'interesting' because although it is one of the highest scoring questions in the section overall, it is the only one that received a score lower than 3 from the ISD, UWI-Mona which would then rate it at 1.5 (comparatively poor

performance). This item was scored highest by respondents in the Faculty of Social Sciences, all three of whom gave it a 4 (excellent performance). It scored lowest in the faculty of Medical Sciences, where it received a 1 (*MESCA Audit report, UWI-Mona, July 2010*).

Teaching Approach

Responses from UTT indicate that in all but one centre/school, teaching approaches foster students' self esteem, social development and cognition. NCU describes that "real life questions and scenarios on local and international issues are introduced to students during lectures with the aim of improving their critical thinking skills; that controversial topics are not avoided during discussions and that classes are operated in a democratic manner fostering openness and egalitarianism" (*MESCA audit report, NCU, June 2010*). At the UWI-Mona, this section was rated quite highly, apart from the two affective area questions (T10 and T 11).

Research & Scholarship

From NCU, the college report describes that research on environmental concerns, particularly those affecting the Jamaican community (bauxite industry in Manchester, watershed management in Portland, water harvesting, top soil management, music and learning, use of natural products to treat diseases) has been ongoing.

From UWI-Mona, it was reported that, although many departments did not have dedicated research on sustainability topics, some staff members did incorporate these into their research, and mention was made that in various departments, specific aspects were indeed studied and reported on, e.g. in the Medical faculty, the management of medical disasters; in Humanities, biodiversity, HIV/AIDS whole school approaches, and citizenship; in the Biotechnology Centre, new technologies that directly address sustainability have been developed (e.g. tissue culture, value-added products for new sustainable industrial and farming enterprises); in Chemistry, Industrial Chemistry students have to do internships, with several involved in projects on environmental/resource management. Sustainability is the core theme for the Institute of SD at UWI-Mona, so there is an MPhil/PhD in Sustainable Development, which is interdisciplinary and covers all dimensions of sustainability. Work is based on research, and not course based.

At the UWI-Cave Hill, there is in fact a research institute focused on sustainability aspects, CERMES, which does offer courses and programmes in this area.

At UB, since at least two staff members have terminal degrees in this area of expertise, there is ongoing research in these areas being carried out, within the Faculty of Natural Sciences.

Service Activities

NCU reports that *every* course in the core of a student's programme has a service learning component which focuses on addressing the social, financial and environmental challenges

affecting the society. Additionally, as a policy of the university, each lecturer's teaching load for the academic year must include a service activity and the university has a vice-president whose mandate is to oversee all university community projects.

UTECH also incorporates community service as part of each student's course load.

At UWI-Mona, in general, with the exception of the Institute for Sustainable Development, which scored all the questions at a mean of 3.5, most faculties indicated that this section demonstrates reasonable to poor performance.

The UB scored highly in the area of staff expertise and willingness. Areas of sustainability do feature in the selection and execution of service projects in the community.

6.3.2. Part B

UTT mentions a caveat re this section: since data was obtained from only two areas (Capital Projects and Physical Infrastructure/Student Services), it is difficult to generalize conclusions. It appears that the results from these two centres are quite different, and so they should not be extrapolated for the whole university. Some consensus however is seen in views on energy management and on human resources.

Planning and Co-ordination

From UWI-Mona report, it is stated that "there is general lack of information or awareness of the university's plans. Those who are aware indicate that the university's strategic plan addresses sustainability more effectively than its operational plan. Implementation of sustainability related initiatives and plans is a challenge, due to budgetary constraints. Green procurement is practiced to a degree, for example with energy-efficient air conditioning units and light-bulbs. However the desire to practice green procurement is superseded by budgetary constraints, or in the case of computers, the needs of the particular department. Not much attention is paid to the chemicals in the cleaning products used. There are staff and student buses available, but no significant carpooling initiatives, so most people with cars drive those onto campus individually." (*UWI-Mona, MESCA Audit Report, July 2010*)

On the other hand, NCU discusses that "the core essence of the university's mission statement speaks to sustainability, Godly service and balance to live in this world and the world to come". (*NCU Audit Report, June 2010*)

Human resources

At NCU there are several benefits provided, including scholarships for staff members to acquire degrees especially in areas that will ensure future sustainability. An annual staff/faculty award programme exists for outstanding performance (research, community service, efficient use of/good maintenance of resources) of staff/faculty members.

At UWI-Mona, “there is no staff orientation programme specifically focused on sustainability. However, within certain sections of the university (e.g. Placement and Career Services, Maintenance), meetings and discussions are regularly held to discuss sustainability related issues such as energy usage. Neither are there formal evaluations of employees’ job satisfaction”. (*UWI-Mona, MESCA Audit Report, July 2010*) Among staff members’ benefits are free tuition, and availability of continuing education programmes. However, this section scored very low in nearly all indicators. Staff members are compensated for additional academic achievements, and the university generally has low staff turnover.

At UB, while there is a high sustainability focus in the University’s mission and vision statements, the policies and strategic plans of the University are not noted to be as highly rated. There was a mixture in the responses to the matter of reducing impacts of human activities and natural disasters and ‘green’ procurement.

Buildings and Grounds

At UWI-Mona, NCU and UB, it was reported that some efforts were made in respect of grey water irrigation/use of native plants in landscaping.

At UWI-Mona, it is reported that “in general, the perception is that while older buildings were not specifically eco-friendly in design, newer buildings are being constructed with sustainability in mind. However, air conditioning is seen as an essential feature due to the climate, and this lowers the perception of overall sustainability.” (*UWI MESCA Audit Report, July 2010*)

At the main campus of the UB, “the design and construction of the buildings are based on ecologically friendly principle, and make use of natural light, natural ventilation and disaster resistance technologies”. (*University of Belize MESCA Report, July 2011*)

Waste Management

In both UWI-Mona and NCU, e-communication is widely encouraged, and this appears to be more in actual practice at NCU. Thus, the reduction of paper waste is being tackled to some extent. In both these universities there is also recognition of the problems of food packaging, and this is dealt with at NCU by having re-usable utensils. At UWI-Mona, there is a plastic recycling programme on campus, though it is not clear how much of an impact this is having, or how widely it is used. At UWI-Mona also, a treatment plant exists for the treatment of liquid waste, and one respondent indicated that it has recently been upgraded. At NCU the installation of a bio-digester to treat liquid waste and for water recycling has begun.

Energy Management

NCU seems to have a strong energy conservation policy and practical conservation actions, while at UWI-Mona energy efficiency and some alternative energy is in operation. Energy use audits are done in some departments. At UWI-Cave Hill, it was mentioned that there had been an energy audit performed within the past year, in 2010. At UTECH, an energy audit had also taken place, and solutions provided for greater conservation. Some actions have also taken place, e.g.,

solar water heaters now replace electric ones. Currently, UTECH consumes 10,000 kwh per month; however, a reduction of up to 15% is required as part of its targets. The new thrust for this university is to generate power through solar energy. At UB, there are attempts made to apply energy conservation practices.

Water management

Due to the recent drought, there is awareness of the need to conserve water in all universities. AT NCU, it is reported that “The University has some major catchment facilities to harvest rain water for the university’s use as regular water supply to the university is unreliable.” (*NCU MESCA Audit report June 2010*)

At UWI-Mona the report indicates, “some newer buildings have been fitted with water-efficient toilets, but the implementation of water saving taps and the harvesting of rain water is still not being implemented. Responses indicate that a new storm water facility is being built”. (*UWI-Mona, MESCA Audit Report, July 2010*) It was reported from UWI-Cave Hill that rain water is also harvested and used for irrigation purposes.

At UB there are indications that storm water catchments are used, as well as conservation measures are in place.

Financial

Overall, this was one of the lower scoring sections in the entire audit tool, largely due to the fact that the respondents indicated they did not know many of the answers to the questions asked here.

At UWI-Mona, it was suggested that “Investment in sustainability related research varies greatly according to department” and according to one respondent, “there is a team in place to monitor socially responsible investments”. (*UWI-Mona, MESCA Audit report, July 2010*).

On the other hand, NCU reports that “each academic department of the university sets aside 2% of its overall budget specifically for sustainability research; separate from the regular research budget”. (*NCU MESCA Audit report, June 2010*)

At the University of Belize, there is no team or committee in operation to monitor socially responsible investments.

Public Engagement

In general, at the various universities, persons employed are involved in community service projects, but this is mainly done on an individual basis and is not necessarily directly focused on sustainability.

Diversity

At NCU the university hosts students from over thirty nations and thus has to cater to cultural differences even within the teaching approach. Furthermore, all functions of the university are guided by liberal democratic principles inclusive of elections at the faculty, staff and student levels. At UWI-Mona, the Dept of Language, Linguistics & Philosophy exposes students to other cultures through language acquisition. These students are trained to develop tolerance and understanding of cultural diversity. The department also organizes and participates in exchange programmes with foreign universities.

At UWI-Mona, it was reported that although “gender equity on campus can be said to be improving, one respondent indicated that within his/her department (Maintenance) there is still the perception that females should be secretaries”. (*UWI-Mona MESCA Audit Report, July 2010*)

At UTT the responses indicate that “there is reasonable performance around the extent to which gender equity is recognized in policy and operations; and the extent to which alleviating measures like scholarships are in place to assist low-income students” (*UTT MESCA Audit report, June 2010*).

In the UB, this section received high ratings, since attention is paid to, for example, gender and low income students.

In the universities it appears that facilities and infrastructure exist for students with disabilities. Scholarships are available for low income students, but they are under-utilized in some cases.

6.3.3 Part C

From UTECH, a general observation in their report was that “Students have a hard time understanding the concept of sustainable development and worse - not understanding the application of this concept in their courses of study”. (*A. Ishemo, UTECH MESCA report, 2010*). There is a Unit specifically set up for mentoring students with the aim of impacting upon students’ lives for appropriate social change in society, particularly those students who are at risk. This unit also caters for students who live in volatile inner city areas, and for disabled students also, as currently, UTECH has over 70 physically challenged students. Students also engage in community service and their performance is included in their transcripts to earn credit. At the UB, “students recently hosted a successful Earth Day. They also focus on energy conservation and recycling of paper” (*University of Belize MESCA report, July 2011*). The UB Environmental Club, one of the many student clubs on campus, encourages energy conservation via posting flyers atop electrical switches and air conditioning units to remind people to switch them off when not in use. However, the university has no halls of residence, so there are no programmes in existence for this. At the UWI-Cave Hill, “those respondents that did comment noted that the activities of Student Organisations are centred on sustainability but many did not have the drive to push certain initiatives”. (*UWI Cave Hill Report, June 2011*)

Student life appears to be a real area that needs to be addressed overall. While there are favourable comments on student learning in relation to sustainability concerns, this has not had much impact apparently on student life and living practices. One wonders how much infusion is actually done in the teaching situation, and, as well, to what extent this is internalized by the student population.

7. SUMMARY of findings

7.1 Key Findings

There is fairly wide variance among the six universities and their relevant departments/faculties in their responses/scores, particularly with respect to Part A of the tool (Teaching, Research & Community Service). In relation to Part B, there was some uniformity of responses, apart from that received from NCU, which generally had higher scores in each indicator than the other three. With respect to Part C, there was greater uniformity of responses, with a few commonalities visible in several indicators. Universities in general, however, were found to be at varying stages, in their operations, e.g., some were just beginning to develop their capacity re sustainability; others were already implementing selected desired actions.

Some of the most common initiatives noted were green landscaping awareness/practices, and willingness and reported ability of lecturers in all institutions to teach/participate in sustainability related courses/actions. Some success was reported with infusion of sustainability concepts/issues into some courses, however, the extent to which this is done is not known, as responses were not sufficiently detailed. Fairly highly rated also was the existence of programmes for under-represented student groups.

However, the most promising initiative was noted at the smallest university (NCU) - that of a *policy* of collaboration and service to the community among staff and students, with attendant activities and rewards. Such practices and policies entail sustainability actions. Here this might be considered as a result of the religious orientation of the university, and also of their smaller numbers and central campus.

A most useful and positive report is the perception among the teaching staff that their approach will lead to desired learning outcomes, e.g., life in a diverse world. This rated second highest of all indicators. It is confirmed to an extent by the students polled, which reported the learning outcomes as highly rated also (4th overall). Students felt that they were learning technical skills and expertise required to solve problems, despite this latter aspect being the lowest of the teaching approach responses by the staff. One question also whether, if the students were being taught and had learnt about sustainability actions, there should have been greater perception among them, and greater involvement in such actions.

On the 'down' side of the various reports, was that Human Resources section was rated very poorly, only just above the Financial Commitment for investment in sustainability actions, which latter might have been expected.

One of the obstacles advanced by several respondents was the lack of financial support to do a variety of activities which would result in sustainability actions. There might also be the problem of physical space. This is said to be the situation in the case of UTECH, which although having a large student body, is housed on a small acreage. Thus, there is the problem of its limited

carrying capacity, which hinders the development of some desired initiatives, e.g., sewage/wastewater treatment.

7.2 Comments on the Audit implementation process.

Due to the time of year during which the exercise was introduced to the universities, (March-i.e. end of semester exams), it proved to be difficult or impossible to conduct this audit for the majority of universities. Only six of the targeted universities were able to complete the activity. In addition, although it had been intended that the University in Haiti would have participated, due to their earthquake at the end of January, 2010, which destroyed most of the University, and disrupted its operations, this was not possible.

There was a problem with several respondents in completing some aspects of the tool, due to the following reports:

- several indicators were too general, and were somewhat confusing for persons to respond to
- persons were reluctant to complete several indicators as they knew little about sustainability
- other persons were reluctant to complete the tool as they felt that their department might be found lacking in many areas and subject to embarrassment
- a six week period was initially given to university representatives in which to do the survey and collate the results. Although this was extended for an additional four weeks, it proved insufficient for persons to obtain information from the wide range of respondents desired for the first four universities that completed the audit. Two other universities were able to complete the audit exercise during the following academic year.

As the information was provided by many different respondents and arithmetic means used to obtain the final results, it is expected that in the case of four of the universities at least, the results should be reasonably reliable. It is assumed in the case of the other two, which provided generalized information for their universities holistically, that their results were obtained from a number of different respondents, and these were collated. At UTT, it must be stated that the information obtained was limited to a smaller number of participants from a limited number of its campuses, and thus is not necessarily a fair indication of the university as a whole.

8.8. RECOMMENDATIONS

- 8.1 Some areas in the present tool need to be refined, or made more specific so as to be more easily understood. Perhaps two persons from the MESCA group could do this. Once that is accomplished, there is a need for those universities which did not complete the activity to do so within the next academic year. The results of this audit are useful [e.g., for self reported assessment, diagnosis, planning] and formal scrutiny of the report should take place in a timely manner within the universities involved.
- 8.2 A framework for Sustainability and Environment aspects and issues to guide policy, planning and action implementation might also be useful. This could perhaps be prepared by persons involved in the present MESCA, and reviewed by others. More support needs to be provided by the MESCA network participants for this, particularly for new or developing universities. It must be remembered however, that, while there can be general guidelines to assist universities in this regard, actions and policies towards sustainability and environment should be localized and contextualized, so that policies and actions in one university may not be relevant for others.
- 8.3 An action plan is considered necessary at this time for these findings to be considered in detail and implementation of some recommendations begun. Costing and funding sources should be included in this plan.
- 8.4 Existing networks should be used or new ones initiated, in order to involve Caribbean universities in greater collaboration for this area. Existing organizations could perhaps be utilized as a tool to get all the principals and vice chancellors of the universities together in a common platform – UNICA perhaps – so that they can be sensitized. Staff members could set up training programmes (like those done by MESA) and online courses together (perhaps the Global Virtual University).
- 8.5 Each university should include in its strategic planning process, a consideration of issues of sustainable development. They should follow the lead of one of the universities in the survey and allocate financial resources in this area. Suggested actions in areas of policy, curriculum, teaching, research, student life and links with community could be prioritized in attempting to assist in solving the problems of the nation states. Possible activities could encompass checking existing plans against the audit results, identifying potential sources of funding.
- 8.6 As indicated in the results, interdisciplinary programmes, cross faculty curriculum development, implementation and research and a focus on sustainability in student life are lacking in five of the six universities, but are wholly desirable, if students are to experience work in all the dimensions of sustainable development, and develop knowledge, skills and attitudes to solve problems of SD, particularly local issues. This is an area apparently requiring much work. A suggestion is made that when UN agencies are

arranging projects in the area of sustainability, a requirement should be the closer collaboration of all areas/faculties.

- 8.7 Greater democratization and inter-faculty involvement would be helpful as well, so that leadership/representatives of all bodies of the universities - student guilds, workers' unions, faculty deans, heads of academic, professional and administrative departments - could work together in planning, monitoring, evaluating actions and finding solutions in prioritized themes in SD. MESCA participants could possibly play a leading role in this kind of action.
- 8.8 Risk assessment and disaster prevention/mitigation in the region, are important, especially at this time. The universities of the region should be taking the lead in the study of these issues, and their research should be highlighted and acted upon. This area was not much mentioned in the four audit reports submitted.
- 8.9 UNEP or other international agency could assist with collaborative ventures for sustainable development projects. For example, the UTECH university report suggested the establishment there of an Institute for Sustainable Development, which could work to alleviate the identified lack of focal points, e.g., merging social, cultural, technical and economic elements, for sustainability at UTECH, and which could subsequently impact the wider society. There is also a possibility of inter-university collaboration to assist UTECH.

Appendix 1. The Audit Tool

MESCA Audit Tool for Caribbean Universities

Part A

Teaching, Research & Community Service

Assessment Indicator Rating Scale	
Score	
X	= Don't know/no information concerning this
0	= None/there is total lack of evidence on this indicator
1	= A little/evidence shows poor performance
2	= Adequate/evidence shows reasonable performance
3	= Substantial/evidence shows good performance
4	= A great deal/excellent performance

In addition to writing the score for each indicator, please include comments which may assist in explaining the information provided.

Code	Indicator	Score	Comments
C	Curriculum		
C1	To what extent does the department/unit offer courses focused on sustainability including its social, economic, and environmental dimensions?		

C2	What is the level of integration of sustainability topics in courses?		
C3	Is there an inter-disciplinary degree programme/course in sustainability studies?		
C4	To what extent are students required to take courses in sustainability topics/issues?		
C5	How accessible are courses in sustainability studies to students?		
C6	To what extent do students enroll in available courses that engage sustainability issues/topics?		
C7	To what extent are sustainability areas considered in selecting, executing and evaluating projects/internships?		
C8	To what extent are work study/internship programmes on sustainability issues/topics given for credit as part of student programmes?		
T	Teaching Approach		
T9	<p><i>To what extent does the lecturer's teaching approach contribute to the development of the following capacities among their students:</i></p> <ul style="list-style-type: none"> - making informed decisions - developing critical thinking skills - increasing sense of responsibility - encouraging respect for others' opinions - developing problem-solving skills, especially local community problems 		

T10	To what extent does the teaching approach contribute to fostering self esteem in students, and fostering good human relationships?		
T11	To what extent does the teaching approach help to prepare students for life in a multi-cultural society (incl. social justice, democracy, citizenship)		
TR	Teaching Resources		
TR 12	To what extent are there staff development opportunities and rewards for sustainability initiatives?		
TR 13	To what extent are communication facilities/collaboration opportunities with other universities/local & global agencies present?		
TR 14	To what extent is there a supply of teaching materials on sustainability?		
R	Research & Scholarship Activities		
R15	To what extent are department staff & students involved in research in the areas of sustainability? (e.g., climate change, energy usage, disaster preparation/mitigation, conflicts)		
R16	To what extent is the department/unit collaborating with other institutions/stakeholders in pursuit of solutions to sustainability issues?		
R17	To what extent is funding accessed for studies/research in sustainability?		
R18	Does the department/unit house any research institute/unit that studies		

	sustainability issues/aspects?		
S	Service Activities		
S19	To what degree do local sustainability issues/challenges form a part of the department or unit's service in the community?		
S20	To what extent are the department's staff and students involved in service activities in the area of sustainability?		
S21	To what extent are areas of sustainability used in selection & execution of service to the community?		
E	Staff Expertise & Willingness		
E22	What is the level of expertise of staff members in the area of sustainability?		
E23	To what extent are staff members willing to carry out research/service activities on sustainability areas/issues/topics?		
E24	To what extent are staff members willing to teach sustainability topics?		

MESCA Audit Tool for Caribbean Universities

Part B

University Management and Operations

Assessment Indicator Rating Scale	
Score	
X	= Don't know/no information concerning this
0	= None/there is total lack of evidence on this indicator
1	= A little/evidence shows poor performance
2	= Adequate/evidence shows reasonable performance
3	= Substantial/evidence shows good performance
4	= A great deal/excellent performance

In addition to writing the score for each indicator, please include comments which may assist in explaining the information provided.

Code	Indicator	Score	Comments
P	Planning & Coordination		
P 1	To what extent do the university's vision and mission statements incorporate sustainability principles?		

P 2	To what extent do the policies of the university include attention to sustainability principles?		
P 3	To what extent do the objectives of the strategic and operational plans address the social, economic and environmental dimensions of sustainability?		
P 4	To what extent are formal strategies stated for reducing impacts of human activities and natural disasters (e.g., CO ² emissions estimated/measured regularly)		
P 5	What is the extent of 'green' procurement? (e.g., computers, cleaning products, office supplies, appliances)		
P 6	To what extent is the campus fleet fuel efficient/using alternatives (e.g., car pools) & regularly monitored re wastes?		
HR	Human Resources		
HR 7	To what extent are orientation programmes on sustainability arranged for new staff members?		
HR 8	To what extent are there continuing education programmes for employees about sustainability issues/topics?		
HR 9	To what extent is there regular evaluation of employee job satisfaction?		
HR 10	To what extent are staff compensation programmes present that take into account staff satisfaction, staff development, future job sustainability?		
HR 11	To what extent is there present a system of staff/employee rewards for sustainability initiatives and service to the community?		
HR 12	To what extent are there continuing		

	education programmes for employees to ensure sustainability of staff and jobs?		
B	Buildings & Grounds		
B13	To what extent are the design and construction of the buildings based on ecologically friendly principles? (e.g., making use of natural light, natural ventilation, disaster resistance technologies)		
B14	To what extent is maintenance, renovation and the operations in buildings carried out in an ecologically friendly manner? (e.g., eco-friendly cleaning products, replacement materials eco-friendly, water based paints, use of recycled materials)		
B15	To what extent is there 'sustainable' landscaping? (using native plants, use of grey/waste water irrigation)		
W	Waste Management		
W16	To what extent are solid waste reduction practices carried on in your university? (e-communications, "waste-free" meal programme)		
W17	To what extent is waste recycling/reuse or treatment carried out? (paper, plastic, metal, glass, composting)		
W18	To what extent is liquid waste reduced or treated?		
W19	To what extent is there hazardous waste management? (gas emissions reduction, toxic materials reduction, radioactive waste treatment)		
W20	To what extent are audits carried out in regard to solid waste production and		

	treatment?		
EM	Energy Management		
EM 21	To what extent are 'renewables' or alternatives used as energy sources?		
EM 22	To what extent are energy conservation practices applied? (heating/cooling, lighting, appliances ecol. friendly in their operations)		
EM 23	To what extent are audits performed in regard to energy usage and management?		
WM	Water management		
WM 24	To what extent are water conservation practices implemented? (water-efficient showers/toilets, harvested rainwater, water storage capacity)		
WM 25	To what extent are facilities built for storm water management?		
WM26	To what extent are audits performed re water consumption/water conservation?		
F	Financial		
F27	What is the percentage of investment in sustainability research?		
F28	Is there a team/committee in operation to establish and monitor socially responsible investments?		
F29	To what extent is there disclosure of investment practices?		
PR	Public Engagement		

PR 30	To what extent are community partnerships built re sustainability issues/topics?		
PR 31	To what extent does the university play an active role in the community in regard to sustainability issues/topics?		
D	Diversity		
D 32	To what extent is gender equity recognized in policy and operations?		
D 33	To what extent are programmes for under-represented groups present? (challenged individuals/foreign students)		
D34	To what extent are alleviating measures in place to assist low-income students? (e.g., scholarships/reduced costs)		

MESCA Audit Tool for Caribbean Universities

Part C Students

Assessment Indicator Rating Scale	
Score	
X	= Don't know/no information concerning this
0	= None/there is total lack of evidence on this indicator
1	= A little/evidence shows poor performance
2	= Adequate/evidence shows reasonable performance
3	= Substantial/evidence shows good performance
4	= A great deal/excellent performance

In addition to writing the score for each indicator, please include comments which may assist in explaining the information provided.

Code	Indicator	Score	Comments
SL	Student Life		
SL 1	To what extent are orientation programmes on sustainability available?		

SL2	To what extent are sustainable lifestyle practices engendered as halls of residence culture?		
SL3	To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?		
SL4	To what extent is career counseling (on work opportunities related to sustainability) available?		
SG	Student Organization and Governance		
SG5	To what extent are student groups collaborating with administration in the areas of sustainability?		
SG6	To what extent are students willing to take responsibility in sustainability activities?		
SG7	Are there any student groups with a sustainability/environmental focus?		
SG8	To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g., sustainable livelihoods training, health, human rights, religion, culture,)		
SO	Student Learning Outcomes		
SO9	To what extent can students understand and communicate effectively about sustainability issues, practices, topics?		
SO10	To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?		
SO11	To what extent have students been able to explore the connections between their chosen study area and sustainability?		

SO12	To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?		
SO13	To what extent are students able to contribute practical solutions to real world sustainability challenges?		

Appendix II. Completed Audit tools from six universities: NCU, UTECH, UTT, UWI-Mona and UWI-Cave Hill, Uof Belize

COMPLETED SUSTAINABILITY AUDIT TOOL

Northern Caribbean University, Manchester, Jamaica.

Indicator	Score	Comment
extent to which department/unit offers sustainability focused courses (global, local)	4	Courses offered by the institution are geared toward addressing social, economical and environmental issues on a local as well as international stage.
level of integration of sustainability topics in courses	3	As a liberal arts university, most of the courses offered by the institution do have a sustainability component. In fact the service learning components of the course have been addressing these issues in a tangible way.
interdisciplinary degree programme/course in sustainability studies	3	
compulsory courses for all students on sustainability topics/issues	4	<p>All students are required to take courses such as: human geography, fundamentals of nutrition, environmental health, sociology and other courses that have environmental focus or themes.</p> <p>The mandatory course for all students called Fundamentals of Christian Education provides the students with a new perspective of education predicating on service to our fellow men and care for the environment - stewardship.</p>
accessibility of courses/continuing education programmes	4	<p>All courses available during regular university hours on the main campus are available through the continuing education institutes and some are offered as online courses.</p> <p>The Training and Consultancy Services Unit (TACSU) of NCU is offering training in an</p>

		array of courses to professionals and consultancy to businesses. TACSU has a range of short courses, workshops and seminars in areas such as Computer Skills, Relationship Building Skills, Leadership, Computer Service Techniques, Management Techniques, and Communication Skills. It also provides need assessments for organizations to determine the training intervention that makes possible the attainment of their corporate goals. Enrolment is open to anyone 16 years and older and there are no special qualifications necessary for entry.
extent to which students enroll in available courses that engage sustainability concerns	3	As a policy of the institution, students are required to take at minimum 43 credits of general education courses spanning all the Colleges thus ensuring the development of a rounded individual – most of these courses have sustainability components.
extent to which sustainability aspects are assessed/examined during courses	4	
extent to which sustainability aspects are considered in evaluating and assessing projects and internships	4	Topics are proposed by the lecturers or evaluated by them to ensure that the topics are relevant to the current reality also students on internships are judged on a higher standard looking at their approach and the philosophy that they bring to that field.
Indicator	Score	Comment
contributes to development of the following capacities among students: making informed decisions, critical thinking skills, sense of responsibility, respect for others' opinions, integrated problem-solving skill, esp. local community problems	3	Real life questions and scenarios on local and international issues are introduced to students during lectures with the aim of improving their critical thinking skills. Controversial topics are not avoided during discussions and also in the area of research. Classes are operated in a democratic

		<p>manner fostering openness and egalitarianism.</p> <p>The university hosts a number of public and/or 'in-house' Lecture Series bringing in qualified professionals from varied fields to address topics/themes which are invariably sustainable in nature.</p>
<p>contributes to fostering self esteem and good human relationships</p>	4	<p>Through various courses for e.g. group dynamics, social and professional ethics and communication, through the varied evaluation methods employing group work and presentations; through academic clubs, weekly religious assemblies, the prayer garden, spiritual master plan activities, special days on the academic calendar geared towards fostering student development for e.g. less stress days, international student days, etc students develop strengths such as confidence, public speaking skills, and the ability to work in group and in stressful situations.</p>
<p>helps to prepare student for life in multicultural society (social justice, democracy, citizenship)</p>	3	<p>The university hosts students from over thirty nations and thus has to cater to cultural differences even within the teaching approach. Furthermore, all functions of the university are guided by liberal democratic principles inclusive of elections at the faculty, staff and student levels. The university awards and rewards students who display excellent citizenship characteristics in its annual awards ceremony and encourages social justice in its everyday activities. Students are thus prepared for life. This is evidenced in the students' behavior outside of class and the sectors within the society that they are employed in after graduation.</p>
Indicator	Score	Comment

staff development and staff rewards for sustainability initiatives	3	
communication facilities and collaboration opportunities with other universities, with local and global agencies to provide data on sustainability aspects	3	<p>NCU has memoranda of understanding and articulation agreements with a number of international universities such as Prairie View in Texas, the University of Maryland stern Shore, Andrews University to name a few, thus enabling collaboration on research and data gathering beneficial to all.</p> <p>Also, students are able to participate in exchange programmes with other universities.</p>
good supply of teaching materials on sustainability	3	
Indicator	Score	Comment
does your department/unit house any research institute that studies sustainability (e.g., environmental concerns like climate change, energy usage, disasters and other concerns like conflicts)	3	<p>As a policy of the university all research funding and activities are monitored by the university research department where request are made for funding.</p> <p>The International Humanities Review is an academic journal that has taken the lead to publish primary and secondary research among and between the varied disciplines that comprise the humanities, behavioural and social sciences. There are other Journals from other Colleges plus the university's journal - Caribbean Annals. All research emanate primarily from this centralized unit. The colleges that house the natural sciences, applied health sciences, environmental geography and graduate programmes have conducted research on environmental concerns especially as it relates to the bauxite industry or life after bauxite in Manchester, water shed management in Portland, water harvesting, top soil management, music and learning, and numerous others.</p>

<p>the extent to which the department staff and students are involved in research and scholarship in the area of sustainability</p>	<p>4</p>	<p>Students are encouraged to conduct research on environmental issues.</p> <p>Studies are done on the impact of bauxite mining on the environment.</p> <p>A draft disaster emergency plan for the university has been completed and was done in collaboration with students and faculty.</p> <p>Scientists from Northern Caribbean University (NCU) namely Dr. Juliet Bailey-Penrod, Mrs. Patrice Williams-Gordon, and Dr. Paul Gyles began a research on the use of garlic and the local sorrel to treat cancer. This has led to collaboration between Grace Kennedy Foods Company and NCU.</p>
<p>the extent to which the department is collaborating with other institutions and stakeholders in pursuit of solutions to sustainability problems</p>	<p>4</p>	<p>Faculty and staff members sit on various national committees and civic bodies and within the parish the university representatives sit on all parish and community committees such as: Guidance and Counselling Association, Manchester Parish Council and all its sub-committees, RADA and its sub-committees, Manchester Parish Development sub-committees, etc</p> <p>Assist in analysis of the Manchester Parish sustainability plan.</p>
<p>the extent to which aspects of sustainability are used in selection and execution of research and scholarship</p>	<p>3</p>	<p>Funds that are allotted for research as well as scholarship have sustainability as a determining factor in the release of these funds. The university has projects funded through the Environmental Foundation of Jamaica, etc which also have sustainability as a major component to the release of funds.</p>
<p>the extent to which funding is accessed in the area of sustainability</p>	<p>3</p>	

Indicator	Score	Comment
degree to which local sustainability issues and challenges form part of the department/unit's service	4	Every course in the core of a student's programme, taught at the university, has a service learning component which focuses on addressing the social, financial and environmental challenges affecting the society.
extent to which department/unit's staff and students are involved in service activities in the area of sustainability	4	As a policy of the university each lecturer's teaching load for the academic year must include a service activity. Lecturers therefore must collaborate with their students and departments to address issues of sustainability. Projects such as recycling executed by the sociology lecturer and her class, annual black history programmes at the women centre and various schools in Manchester through the history department lecturers, nursing students giving their services to the public as well as at the veteran's home in South Manchester, guidance counselling students working at the counselling centre that serves the county of Middlesex, business students working at the entrepreneurial centre, etc are but examples of service activities in the area of sustainability.
the extent to which aspects of sustainability are used in the selection and execution of service to the community	4	The university considers it as a part of its mandate to ensure that the wider community is served and stewardship of time and resources are accounted for. As such the university as a vice-president whose mandate is to oversee all university community projects among other things. Community service programmes should effect change and bring hope. Departments within the university are therefore mandated to be involved in a number of service activities that engenders

		sustainability – each department therefore has a number of programmes and collaboration with public and private institutions in Manchester in particular and the south and west coast of Jamaica in general. Departments have also worked at empowering individual communities.
Indicator	Score	Comment
level of expertise of staff members in the area of sustainability	4	The university has a large percentage of faculty members who are qualified in the area of sustainability. In the department of history, geography and social sciences, and the dept. of pure and applied sciences for example, lecturers possess advanced and terminal degrees in all aspects of sustainable development – there are programmes at the undergraduate and the graduate levels on environmental sciences or its affiliate.
the extent to which staff members are willing to carry out research and service activities on sustainability aspects/issues/topics	3	This is done in a number of ways: topics proposed for research by students must have some relevance to issues affecting the society or the world. This becomes significant as each programme at the undergraduate and graduate level must have a final research paper valuing at least 3 credits. Also each year the university focuses on a research theme for its research day which would be convened in the spring semester. Faculty members’ research for the year tends to coincide with the university’s.
the extent to which staff members are willing to teach sustainability topics	4	
Indicator	Score	Comment
mission and vision statements incorporate sustainability concerns & principles-		The core essence of the university’s mission statement speaks to sustainability, Godly service and balance to live in this world and the world to come.

policies include attention to sustainability principles	3	The policies though guided by the university's mission at times are incomplete as the university makes its transition from a college to a university.
Objectives of strategic and operational plans address social, economic and environmental dimensions of sustainability-	4	The operation and strategic plan of the institution takes into account our responsibility to the society hence we provide courses that are relevant to addressing the various challenges facing our country, viz courses in social work, counselling, criminal justice to name a few have been introduced. In the field of electronics the university has introduced courses in the technical field such as engineering, electronics, automotive and hospitality; employment in these areas are good as well as persons will be able to use these skill to create their own employment. The university aims at ensuring that all its policies are 'green' and hopes to one day sell itself as the centre for sustainable education.
formal strategies stated for reducing impacts of natural disasters and human activities, e.g., reducing greenhouse gases.	3	The university has a standing committee called its Critical Incidence Management committee that formally seeks out strategies to implement to reduce the impact of all disasters on the university. The committee has however not worked on all aspects of the disaster management evenly thus some areas are far in advanced of other areas.
purchasing (e.g., computers, cleaning products, office supplies)	3	The procurement committee looks at the products that are of the highest quality, long lasting and reusable. They practice aspects of green procurement. Recommendations from this committee help to refine the university's procurement policy and practice.
campus fleet is fuel efficient/regularly monitored re	2	The university outsources most of its transportation needs and only owns a few

wastes (bus-pass programme, car pools)		vehicles to remove refuse and to transport building materials which operates on a schedule. There is room for improvement though in the management of the university fleet. The university could also influence car pooling practices on its campuses on schools but it has not done so, granted these cars are not university owned.
Indicator	Score	Comment
orientation programmes on sustainability issues for new staff members	3	Stewardship is the fundamental principle on which the orientation for new staff and faculty members are built. New staff/faculty members are reminded of this philosophy and of the importance of taking care of the environment, their management of resources placed in their care, and the use of their talents for service to their fellowmen. In this process the philosophy, mission and vision of the institution are outlined.
mentoring programme in place for staff and students	3	New workers are guided by senior staff members through a mentorship programme. The university has begun a staff/faculty mentoring programme for students. Students have their own big brother/sister mentoring programme in place. Though this is offered to all students not everyone participates.
education for employees about sustainability aspects/issues	3	The university is relatively small with less than 1000 employees across it various campuses. In order to maintain the ethos of the institution regular staff meetings and workshops are held throughout the semester at the various campuses. At the beginning of each school year, the first two days referred to as a Colloquium bring all faculty and staff from all campuses to the main campus for workshops and input into the operations of the university for the

		<p>upcoming school year. Faculty and staff participate in conferences, symposia locally and internationally on sustainability. During the semester, important sustainable information is disseminated through electronic means, texts, emails etc outlining the importance providing optimum service to the students and the wider community.</p>
workforce development for staff sustainability	3	<p>In house training is encouraged for all faculty and staff. As a policy the university allows faculty/staff to access university courses after one full year of service. Through the faculty senate, the staff senate the office of the associate vice president for academics and the vice president for university relations and services workforce development for staff sustainability is attempted.</p>
evaluation of employee satisfaction	3	<p>Evaluations of worker satisfaction are done through worker consultations, reports received from department managers as well as representations made on behalf of staff/faculty members from their respective senates – staff/faculty senates. There is however a deficiency in hearing the feedback in a timely fashion and at times at all of the evaluations.</p>
staff compensations programmes taking into account staff satisfaction, development, future sustainability of certain jobs	3	<p>There is a compensation/ remuneration package for staff members covering a number of categories to include: Pension scheme, family health benefits, bereavement benefits, education benefits for staff members and family, etc. Staff /faculty members are awarded scholarships or assisted in their bids to receive scholarships to acquire degrees in area that will ensure future sustainability.</p>
system of staff rewards for sustainability initiatives and	3	<p>There is an annual staff/faculty award programme for outstanding performance of</p>

service to community		<p>staff/faculty members. These awards range from:</p> <p>Academic excellence through research and personal upgrade, Community service, to efficiency with the use and maintenance of resources.</p>
Indicator	Score	Comment
design and construction based on ecologically friendly principles	3	All new buildings on the campus are built following environmentally friendly principles. The clearance of land and the reuse of material excavated to ensure that little disturbance of the environment are done plus areas are allotted for the planting of trees and other greenery. There are also green areas on the campus that are untouched by human activities.
maintenance, renovation and operations of buildings carried out in ecologically friendly manner	3	Material, chemical used for maintenance and renovation must not be harmful to human as well as the environment.
sustainable landscaping (using native plants, grey waste water irrigation)	4	The campus is well manicured with fruit trees and vegetation. Currently the university uses grey water for irrigating plants. Faculty/staff and students are able to participate in the university's landscaping projects.
solid wastes reduction (e-communications, initiatives e.g., "waste-free' meal programme)	3	The university encourages the use of reusable eating implement to reduce the reduction of Styrofoam boxes and plastic forks. It has become difficult to purchase juices in paper boxes rather than plastic as most juices today are packaged in plastic. The improvements in the use of technology on the campus reduce the amount of waste paper on the campus. The technology department of the university designed a learning system for the university, as well as a student management system and a

		distance education platform for online delivery which necessitated that all course outlines, memorandum, and assignments, etc are now sent electronically. As a policy of the university, all internal mails must be sent using the university assigned email addresses. Departments are also encouraged to reuse paper where possible.
waste recycling/treatment (paper, plastic, metal, glass	2	The university supports this practice is undertaken as student initiatives/projects, the university however is engaged in a university wide compost project to assist the parish especially the farmers with fertility issues on bauxite mined lands.
liquid waste reduction/treatment	3	The university has commissioned the installation of a bio-digester to treat liquid waste and for water recycling.
inventory of gas emissions/reduction/treatment	2	Inventory documents available through the department of planning.
hazardous waste management (reduction of toxic materials, radioactive waste)	3	
regular audits done	3	Reports available at the department of planning.
Indicator	Score	Comment
'renewables' as energy source/alternative energy sources	2	The university has developed an alternative energy policy which it has formulated into an actual plan for energy use at the institution. The implementation of this alternative energy source will be done in the near future which the university has confirmed will reduce the cost of electricity in the long run.
energy conservation (heating/cooling, lighting, power	3	The university does have a strong energy conservation policy for e.g. class rooms are

for appliances)		designed to use natural lighting and fans instead of air conditioning, florescent lighting is used as a means of energy reduction. Energy management is centrally done on the campus. Individual departments cannot purchase equipment that will consume energy without it being approved centrally not only for conservation purposes but to ensure that the sites of implementation are wired to accept additional voltages thus reducing the likelihood of inefficiencies or fires, etc
regular audits done	4	The university conducts regular audit of energy use this is done through internal mechanism as well as by external consultants. Recommendations are used to frame the university energy policy.
Indicator	Score	Comment
water consumption/conservation: (efficient showers, toilets, harvested rainwater)	3	The university has some major catchment facilities to harvest rain water for the university's use as regular water supply to the university is unreliable.
storm-water management	2	
regular audits done	2	
Indicator	Score	Comment
committee responsible for establishing, monitoring socially responsible investments	3	The finance committee of the university is charged with the responsibility of implementing socially responsible investment; the committee takes into account the economic benefits to the community by direct and indirect employment, the negative or positive impact on the community.
percentage of investment in sustainability research	3	Each academic department of the university

		sets aside 2% of its overall budget specifically for sustainability research; this is separate from the budget allocated for the department of research.
disclosure of investment practices	3	The university operates a policy of full disclosure of its practices to individuals who they deem will not use the information in a malicious or mischievous manner.
Indicator	Score	Comment
extent to which community partnerships are built re sustainability concerns/issues	4	A major component of the university's service learning mandate is the community partnerships built to tackle sustainable issues. The university is perceived to be a beacon on the hill that has a responsibility to service the neighbouring communities. After such countless partnerships have been established, for e.g. the university has embarked on an eight-week parenting programme in the Barnstaple, May Day areas - a mile east of the main campus. Some 30 parents have signed on and here it is hoped participants could better influence those in their charge. The crime riddled area of Greenvale, will be the next targeted area. In collaboration with Scotia Bank the university has established a community computer centre on the main campus where community members are certified free of cost in varying computer related programmes aimed at empowering the ordinary citizen.
collaboration with other universities on sustainability-President	2	
playing an active role in community re sustainability issues	4	NCU operates the Community Counselling and Restorative Justice Centre located at the RADA building in Mandeville. Here, persons

	<p>can literally walk off the street and into its offices for various kinds of counselling services. The services offered by the Centre are threefold: (1) intervention, (2) restorative justice and (3) preventative measures.</p> <p>In the area of intervention; the centre plays a crucial role in providing professional and competent intervention services to its clients from the Mandeville communities and beyond, including (a) individual and group counselling (b) family counselling (c) grief and loss therapy (c) mediation (d) psychological screening and assessment, and (d) appropriate referrals for services that are not offered at the Centre, among others.</p> <p>Where it concerns restorative justice; emphasis is placed on repairing the harm caused to people, relationships and the community, as a result of criminal behaviour. The willing parties meet at the Centre, or at another suitable location, to discuss the harms caused and try to bring about resolution and reconciliation. The preventative approach seeks to prevent as opposed to cure hence the centre is used as the official referral agency for training, seminars and workshops. These seminars and workshops take into consideration topics concerning marriage and family enrichment, parenting skills, drug awareness, and other areas of personal and professional growth.</p> <p>The university also operates the Morrison Centre on Brumalia Road since 2006, which specialises in providing business education, training and advisory services to micro, small and medium sized enterprises. Here, he</p>
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		disclosed, persons who have lost their jobs and may not have had a business orientation can learn and launch entrepreneurial endeavours.
Indicator	Score	Comment
gender equity recognized in policy and operations	4	As a Seventh-day Adevntist institution equity is practiced in areas like employment.
programme for under-represented groups	3	All groups on the campus have an association or a club that advocates their concerns to the administration which give them a sense of pride on campus. Though we cannot readily identify a minority group, this group would have been subjected to laws governing representation on the campus.
cost reduction/scholarships available for low income students	4	Most scholarships advertised have a component that requires that the applicant shows that they have a need. Also students are given the opportunity to work and study in various departments which is beneficial to the students as well as administrative cost reduction is seen.
Indicator	Score	Comment
orientation programmes on sustainability concerns, practices	3	The course called Freshman Seminar is a compulsory course for all first year students. Students are taught how to manage time, money, and solve academic problems. There is also a “big brother and sister” programme to mentor students.
career counseling on work opportunities related to sustainability aspects	2	More emphasis is placed on financial and social area.
involvement of students in sustainability initiatives on campus	1	
Sustainable lifestyle practices engendered as dormitory		Lights are turned off and electrical appliances are plugged out when not in use

culture.		in the rooms. Rooms are kept clean however there is room for improvement in the rest rooms. Guest speakers are invited unto the dormitories to address topical issues including issues of sustainability. A buddy system is in place as well as students have resident advisors.
Sustainable initiatives in dormitories begun and implemented by students themselves, without influence of academic staff	3	Students practice water conservation. There are times of the year when this is encouraged more stringently than at other times.
Indicator	Score	Comment
student governance groups involved in university decision-making, e.g., how resources are allocated for sustainability areas	3	The United Student Movement which is body that represents students on campus sits on all decision making bodies including the administrative council which is the highest decision making body at the university.
student collaboration with administration in the areas of sustainability	3	
student willingness to take responsibility in the areas of sustainability activities	3	
existence of student groups with environmental focus	1	There is not an environmental club on campus, however social clubs such as rotaract do embark on environmental projects such tree planting, recycling.
voluntary community service by students related to sustainability concerns (e.g., partnerships with community schools and agencies towards actions, including those with focus on health, human rights, culture, religion and belief systems)	4	100% of the 31 social clubs on the campus focus on outreach programmes as a part of their mandate and the basis on which funding is released to the clubs. These include but are not limited to: visits to and re-building projects for homes of the elderly, orphanage. The United Student Movement does an annual programme called school impact where students from the university visit schools over the island assisting teachers for the day and bringing messages

		of hope and encouragement to the students.
student involvement in sustainability initiatives in local community (e.g., sustainable livelihoods training)		Students doing family life education worked with families from within the university community teaching them ways to be self sufficient and also providing the ways and means by making linkages with agencies and organizations to earn an income.
Indicator	Score	Comment
Students can understand and are able to communicate effectively about sustainability concerns and practices	3	Students from all Colleges except the Business College are able to speak effectively about sustainability concerns, business students felt they were more effective speakers on financial and social sustainability but they are less au fait with issues on the environment.
Students are developing and using an ethical perspective of themselves as part of an inter-connected world	3	
Students are able to explore the connections between their chosen course of study and sustainability areas	3	
Students are developing technical skills, expertise needed to conceptualize and implement sustainable solutions to problems	4	Based on the number of outreach programmes conceptualized and implemented by social and academic clubs the university does well in this area. The university has also established itself as leaders in the region in conceptualizing problem solving technology to be used to deal with issues of sustainability. For e.g. undergraduate students from the computer science department have won the Microsoft Imagine Cup Regional Finals for the past three years and placed 3 rd internationally out -conceptualizing designs from graduate students and students within developed countries in North America and Europe.
Students are able to contribute practical solutions to real world sustainability challenges	3	The Microsoft Imagine Cup is an annual competition sponsored and hosted by Microsoft Corp. which brings together young technologists

	<p>worldwide to help resolve some of the world's toughest challenges. Team Educ8, winner of the regional finals, named its project "eSCAPE" (Electronic School Computer Aid for Primary Education) which is designed to teach literacy at the primary school level.</p> <p>The Communication Studies students donated a reading kit to the Albion Primary School in Manchester to aid its "Literacy for Life" project. "Literacy for Life" is a reading project aimed at improving the reading performance of low-performing students.</p>
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MAINSTREAMING OF ENVIRONMENT AND SUSTAINABILITY IN CARIBBEAN UNIVERSITIES (MESCA): AN AUDIT REPORT

UNIVERSITY OF TECHNOLOGY, JAMAICA.

Prepared by Amani Ishemo, Ph.D

INTRODUCTION

The University of Technology, Jamaica (UTech), formerly College of Arts, Science and Technology (CAST) was established in 1958, under the name, *The Jamaica Institute of Technology* on the site located at Hope, formerly occupied by the Jamaica Farm School. Having acquired University status in 1995 and chartered as a University in 1999, the University's primary aim is the development of technological and other skills in its students in order to meet Jamaica's manpower and development needs particularly in technological areas. The University of Technology is modelled as a Polytechnic University with a thrust on ensuring that there is a synergy in theory and practice in the training and functioning of the university. Some of the programmes offered at UTECH, all the only one of their kind in the entire English speaking Caribbean. Thus, from that point of view, UTECH has tremendous potential in fostering sustainable development in Jamaica.

METHODOLOGY

A questionnaire designed by MESCA was used to obtain data from students, academic staff and administrators of the University of Technology. Due to the time constraint, for the academic staff sections, (teaching, research and service) data were gathered from Vice Deans of five faculties, simply because the role of vice deans is primarily to oversee the academic operations of each faculty.

In terms of administrators; the Vice Presidents of Planning and Development, Assistant Registrar for Students' Services, Director of Human Resources, Director of Facilities Development, Director of Public Relations and the Manager of UTech's Enhancement Project were all interviewed. Although the questionnaire was filled out, the nature of the interview was more of an extended discussion. The items in the questionnaire were so broad and therefore unable to pick up important issues. The ambiguity of the questions was pointed out by several interviewees.

With regards to students' interviews, a sample size of 230 was chosen among the student population of 10,184. The sample size represented 2.3% of the total student population. Random sampling was employed to select students from the eight faculties (Table 1).

The data were collected over a six-week period and analysis was conducted over a five-week period between the months of May and June 2010.

Table 1: Sample Size of Student Population

Name of Faculty	Number of Respondents
Built Environment	30
Business Administration	50
Health and Applied Sciences	30
Engineering and Computer	60
Education and Liberal Studies	30
Law	10
Hospitality and Tourism Management	20
Total	230

Findings/Discussion

- UTech courses of study cover almost all aspects in terms of education for sustainable development. However, the main problem is that the courses are disjointed and thus fail to be a force to reckon with in terms of fostering sustainable development. For that matter, it appears that tertiary level education institutions suffer the same problem of understanding, interpreting and applying the sustainable development principles in their education programmes and university operations.
- Vice Deans at UTech were critical of the survey instrument that it was too general and in some cases ambiguous. However, it is clear that the issue of sustainability in education programmes is not well understood and therefore its application and beneficial results is unknown. With an exception of the Faculty of Health and Applied Sciences and to a lesser extent, the Faculty of the Built Environment, the rating scale for curriculum application to sustainability, teaching resources and research activities are low. However, all faculties seem to do better on teaching approaches.
- The comments by Vice Dean are as follows:
 1. Some modules include elements of sustainability but not to a great deal and there is not much integration of courses for the purpose of achieving sustainability, and in many cases each course/module is run independently.
 2. There is no specific course called sustainable development, and the concept is not even considered when doing projects or internships.
 3. Recognition of the importance of seeking ways to integrate courses to achieve sustainability will inevitably be a major boost to enhance UTech as a polytechnic university. The elements are present but they are so disjointed. The staff complement is of a high quality therefore with good planning, the implementation of sustainability in programme delivery and the output of students who can function in the society after graduation can be achieved.
 4. There are significant collaborations between UTech programmes and other universities locally and overseas, however, very little research on sustainability is carried out among its staff members. This is as a result of the lack of financial resources and heavy teaching load.

Students' Responses

The problem of understanding and application of the concept of sustainability extends from the lecturers to students. With an exception of student organization and governance, the appreciation and effectiveness of sustainability in other elements of the survey instrument is low (Table 2). Students have a hard time understanding the concept of sustainable development and worse not understanding the application of this concept in their courses of study.

Table 2: Students' Response

Code	Indicator	Score	# Respondents	% of Total
SL	Student Life			
SL 1	To what extent are the orientation programmes on sustainability available?	1	220	96
SL 2	To what extent are sustainable lifestyle practices engendered as halls of residence culture?	1	230	100
SL 3	To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?	2	202	88
SL 4	To what extent is career counseling (on work opportunities related to sustainability) available?	1	215	93
SG	Student Organization and Governance			
SG 5	To what extent are student groups collaborating with administration in the areas of sustainability?	2	225	98
SG 6	To what extent are students willing to take responsibility in sustainability activities?	3	200	87
SG 7	Are there any student groups with a sustainability/ environmental focus?	1	197	
SG 8	To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g., sustainable livelihoods training, health, human rights, religion, culture,)	4	230	100
SO	Student Learning Outcomes			
SO 9	To what extent can students understand and communicate effectively about sustainability issues, practices, topics?	0	230	100
SO 10	To what extent have students been enabled to develop and use an ethical perspective of them as a part of inter-	X	230	100

	connected world?			
SO 11	To extent have students been able to explore the connections between their chosen study area and sustainability?	0	215	93
SO 12	To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?	3	200	87
SO 13	To what extent are students able to contribute practical solutions to real world sustainability challenges?	3	227	99

*Number of Respondents = 230 Students

Score

X = Don't know/ no information concerning this

0 = None/ there is total lack of evidence on this indicator

1 = A little/ evidence shows poor performance

2 = Adequate/ evidence shows reasonable performance

3 = Substantial/ evidence shows good performance

4 = A great deal/ excellent performance

Comments by University Administrators

1. UTech's land space is small (60 acres). The carrying capacity of this space is so small to implement some of the sustainability projects that might require adequate land space i.e. management of sewage waste on campus. In addition to that, just like other institutions, the university has limited financial resources to implement many sustainable development projects.
2. A lot of work is done at UTech but not coordinated to go across the disciplines. There is a lack of integration, a factor resulting to missing a lot of opportunities. Thus coordinated action is required to bring about effective and longstanding results.
3. Socio-cultural aspects are essential parts of sustainability. There needs to be a full understanding on this aspect in order to exert appreciable impact of sustainability at UTech. We need to move away from a techno-centric bias in order to implement a full picture of development.
4. Jamaica has developed a new building code one of which is an energy code. UTech has been approached by International Code Council (ICC) to provide ICC training in Jamaica. This means UTech should review all teaching curriculum that are relevant to ICC.
5. There is a sense of understanding that a lot of sustainability issue is application technology transferred to work in conjunction with economic and cultural fronts. UTech being a technical university could be a catalyst to achieve this synergy for development in Jamaica and the English speaking Caribbean.
6. UTech has established the Computing and Engineering Entrepreneurial Centre (CEEC). CEEC is providing a six-month course approved by NEPA and UNEP to help phase out CFCs. The target groups are: Refrigeration technicians, all technicians working in engineering companies, solar energy companies and public institutions. UTech's staff technicians have pursued the course so that the institution can engage in good environmental practice. The CEEC is not an academic unit; it is rather geared for boosting skills competence among participants. Nodes for training across the country can be established with the assistance of UNEP.
7. Currently, there is an ongoing energy audit to implement solutions in phases:
A drive to conserve energy by replacing electric water heaters on campus with solar heaters. Currently, UTech consumes 10,000 kwh per month, reduction of up to 15% is required. The thrust is to generate power through solar energy.
8. It is strongly suggested that all engineering and engineering related disciplines across the university ought to take the course offered by CEEC on energy conservation as a requirement.

Student Services

UTECH has a Unit for mentoring students with the aim of impacting upon students' lives for appropriate social change in society, particularly those students who are at risk. These students also engage in community service and their performance is included in their transcripts to earn credit. The Unit also mentors students who live in volatile areas of Kingston and St. Andrew such as Mountain View, August Town and Tavern. The Unit also provides grievance counseling for students who experience difficulty in the event of death of family members, relatives and/or friends. The Unit also looks at the welfare of students who experience violent impact on them e.g. rape, being held up or wounded. These are issues that some students are fearful of everyday, particularly those residing in volatile areas.

The Unit also sees to the care of disabled students; those who are blind, with one leg or otherwise challenged. Currently, UTech has over 70 physically challenged students, and that population is increasing, particularly those in need of psychiatric assistance.

RECOMMENDATIONS

- UTECH along with about 15 other tertiary institutions in Jamaica is engaged in a collaboration called the University of Jamaica Initiative, in terms of research, consultancy, teaching etc. In this regard, UNEP should assist the initiatives of collaborative ventures for sustainable projects. The involvement of UNEP would stir the effective capacity and logistics for effective results for sustainability across institutions involved in the University of Jamaica Initiative.
- Development of Sustainable Development Institute at UTECH.
UNEP should assist in establishing a **Sustainable Development Institute (SDI)** at UTech. The Institute should work to alleviate the problems already mentioned, such as coordination of all courses of study leading to sustainability focus, research on sustainability, and stimulation on innovation of sustainability activities; e.g. merging social, cultural, technical and economic elements, for sustainability at UTECH and fostering the impact to the wider society. Finally, the SDI of UTECH should foster sustainability by collaborating with other institutions under the University of Jamaica Initiative. A comprehensive proposal could be prepared in this regard.
- The SDI would also create nodes across Jamaica to promote the development process of the physically challenged individuals. This initiative has already started under the Student Services' Unit but it is not durable because of resource constraints.
- UNEP should assist in developing a module on sustainable Development for Caribbean Universities.
- UNEP should also promote a date for commemoration of Education for Sustainable Development in Caribbean Universities.

APPENDICES – UTECH Part A

Code	Indicator	Engineering	Business	Education	Health & A. Science	Built Envir.
C	Curriculum					
C1	Extent Dept. offer courses on Suggestions	1	1	2	3	3
C 2	Level of integration	1	1	2	3	2
C 3		0	0	0	2	0
C 4	Exp. Required for course	1	0	2	4	0
C 5	Accessibility of course	2	0	2	4	3
C 6	enrollment	1	0	2	4	2
C 7	Sugt. Evaluation, projects	0	0	1	3	3
C 8	Work study	0	0	1	3	2
T	Teaching Approach					
T 9	Making informed decisions	3	2	3	3	2
	Developing critical thinking	3	1	3	3	2
	Increasing sense of Response	3	1	3	3	2
	Encouraging respect for others	2	1	3	3	2
	Problem solving skills	3	1	3	3	2
T 10	Teaching human relations	2	2	3	3	3
T 11	Prep. Multi-Cultural society	3	2	3	3	3

TR	Teaching resources					
TR 12	Staff Dev. Activities	2	1	0	2	1
R 13	Collaboration other Univ.	0	2	3	2	2
TR 14	Teaching Material	0	2	3	3	2
R	Research &Scholarship Activities					
R 16	Extent collaboration with other Institution	1	0	1	2	2
R 17	Fundraising Accessibility	0	0	0	1	1
R 18	Research institute Sustainability	1	0	0	0	0
S	Service Activities					
S 19	Local Comm. Sustainability	1	1	1	2	2
S 20	Student Involvement	1	1	1	3	3
S 21	Sust.service to Comm.	1	1	1	3	3
E	Staff Expertise & willingness					
E 22	Level staff of staff expertise	3	1	1	3	3
E 23	Staff reservation Sustainability	3	3	3	3	3
E 24	Staff to teach sust.	3	3	3	3	3

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Part

B: University Management and Operations

Code	Indicator	Score
P	Planning & Coordination	
P 1	To what extent do the university's vision and mission statements incorporate sustainability principles?	2
P 2	To what extent do the policies of the university include attention to sustainability principles?	2
P 3	To what extent do the objectives of the strategic and operational plans address the social, economic and environmental dimensions of sustainability?	3
P 4	To what extent are formal strategies stated for reducing impacts of human activities and natural disasters (e.g., CO ² emissions estimated/ measured regularly)	3
P 5	What is the extent of "green" procurement (e.g., computers, cleaning products, office supplies, appliances)	2
P 6	To what extent is the campus fleet fuel efficient/using alternatives (e.g., car pools) & regular monitored re wastes?	1
HR	Human Resource	
HR 7	To what extent are orientation programmes on sustainability arranged for new staff members?	0
HR 8	To what extent are there continuing education programmes for employees about sustainability issues/topics?	0
HR 9	To what extent is there regular evaluation of employee job satisfaction?	2
HR10	To what extent are staff compensation programmes present that take into account staff satisfaction, staff development, and future job sustainability?	2
HR11	To what extent is there present a system of staff/employee rewards for sustainability initiatives and service to community?	1
HR12	To what extent are there continuing education programmes for employees to ensure sustainability of staff and jobs?	2
B	Building & Grounds	
B 13	To what extent are the design and construction of the buildings based on ecologically friendly principles? (e.g., making use of natural ventilation, disaster resistance technologies)	1
B 14	To what extent is maintenance, renovation and the operations in buildings carried out in an ecologically friendly manner? (e.g., eco-friendly cleaning products, replacement materials eco-friendly, water based paints, use of recycled materials)	1
B 15	To what extent is there 'sustainable' landscaping? (using native plants, use of grey/waste water irrigation)	3
W	Waste Management	
W 16	To what extent are solid waste reduction practices carried on in your university? (e- communications, waste-free meal programmes)	1
W 17	To what extent is waste recycling/ reuse or treatment carried out? (paper, plastic, metal, glass, composting)	1
W 18	To what extent is liquid waste reduced or treated?	1
W 19	To what extent is there hazardous waste management? (gas emissions reduction, toxic materials reduction, radioactive waste treatment)	1
W 20	To what extent are audits carried out in regard to solid waste production and	2

	treatment?	
EM	Energy Management	
EM 21	To what extent are 'renewable' or alternatives used as energy sources?	1
EM 22	To what extent are energy conservation practices applied? (Heating/ cooling, lighting, appliances ecol. Friendly in the their operations)	1
EM 23	To what extent are audits performed in regard to energy usage and management/	3
WM	Water Management	
WM 24	To what extent are water conservation practices implemented? (water-efficient showers/ toilets, harvested rainwater, water storage capacity)	2
WM 25	To what extent are facilities built for storm water management?	2
WM 26	To what extent are audits performed re water consumption/ water conservation?	3
F	Financial	
F 27	What is the percentage of investment in sustainability research?	0
F 28	Is there a team/committee in operation to establish and monitor socially responsible investment?	0
F 29	To what extent is there disclosure of investment practices?	
PR	Public Engagement	
PR 30	To what extent are community partnerships built re sustainability issues/topics?	2
PR 31	To what extent does the university play an active role in the community in regards to sustainability issues/topics?	3
PR 32	To what extent is gender equity recognized in policy and operations?	1
PR 33	To what extent are programmes for under-represented groups present? (challenged individuals/foreign students)	2
PR 34	To what extent are alleviating measures in place to assist low-income students? (e.g., scholarships/reduced costs)	2

Assessment Indicator Rating Scale

Score

- X = Don't know/ no information concerning this
- 0 = None/here is total lack of evidence on this indicator
- 1 = A little/ evidence shows poor performance
- 2 = Adequate/ evidence shows reasonable performance
- 3 = Substantial/ evidence shows good performance
- 4 = A great deal/ excellent performance

**REPORT SUMMARIZING THE RESULTS OF THE RESPONSES TO THE AUDIT CARRIED
OUT AT THE
UNIVERSITY OF TRINIDAD AND TOBAGO (UTT) FOR THE
MAINSTREAMING ENVIRONMENT AND
SUSTAINABILITY IN CARIBBEAN UNIVERSITIES
(MESCA) INITIATIVE [17/5/2010]**

A) Introduction

The University of Trinidad and Tobago has been in existence since 2004. It was developed from the Institute of Technology (TTIT) which was a technical school located at Point Lisas in the south of Trinidad. The mandate of UTT is to meet the needs of Trinidad and Tobago for a highly trained and qualified technological manpower base. Originally the focus was on Engineering Technology based degrees however since its inception it has broadened its focus to areas such as; The Performing Arts, Sports and Leisure Studies, etc.

The Academic Structure of UTT comprises three (3) schools (the School of Science, Engineering and Technology, the School of Cognition, Learning and Education and the School of Postgraduate Studies, Research and Development). Within the schools are various Centres and Academies. Within each Centre or Academy exists various programmes of study at the pre-undergraduate, undergraduate or graduate level headed by a Programme Head (Professor or Coordinator where applicable). In addition to these components of the UTT academic structure, there also exists institutes which ‘fall under’ the School of Postgraduate Studies, Research and Development.

B) Sampling technique used for the MESCA audit

The audit tool (in the form of a 3-part questionnaire) was designed to obtain information from three (3) key areas at each university; a) Part A-Teaching, Research and Community Service, b) Part B-Operations and Management and iii) Part C-Student Involvement.

Part A

Information that was needed from the Academic Staff to complete Part A was sent via emails to eighteen (18) Programme heads and then ‘followed up’ with a PowerPoint presentation two (2) weeks later. The purpose of the presentation was to give the faculty some background as to the objectives of the audit and hopefully get more ‘buy in’ from them as opposed to only sending out questionnaires.

Part B

E- Mails were sent to those persons from whom information was requested. Unfortunately, given time constraints, it was not possible to deliver a PowerPoint presentation to them. For this part, questionnaires were sent to relevant personnel in the areas of a) Human Resources, b) Capital Projects and Physical Infrastructure, c) Finance, d) Energy, Waste and Water Management and e) Student Services i.e. the areas in which Operations and Management ‘reside’ at UTT. Each person e-mailed was asked to complete the section in this part that was relevant to them. In some cases, it was possible to obtain responses from more than one person to one or more sections.

Part C

For this part, it was most difficult to obtain information from students given that the time at which sampling was conducted fell in the midst of final exams. Hence to try and overcome that issue, questionnaires were sent via e mail to the Presidents and Vice Presidents of all Student Guilds at UTT (17 in total). It was hoped that at least some useful information would be obtained to give the student perspective.

It is important to note that the time for sampling was only three weeks, i.e. from the time when the questionnaires were received to the time for submission of the final report.

C) Results of Sampling

The Assessment Indicator Rating Scale was used in the responses in the following sections in Parts A-C of the audit tool.

Part A- Teaching, Research & Community Service

NB:

- i) the value X in the Rating Scale above has been replaced by <0 in the following 6 sections
- ii) BAFT=Biosciences, Agriculture and Food Technologies
- iii) ICT=Information and Communication Technology
- iv) Each question has a possible total score of 4
- v) "Areas within the University" can be a Programme of study, a Centre, Academy, School or Institute.

Assessment Indicator Rating Scale

Score

X = Don't know/no information concerning this

0 = None/there is total lack of evidence on this indicator

1 = A little/evidence shows poor performance

2 = Adequate/evidence shows reasonable performance

3 = Substantial/evidence shows good performance

4 = A great deal/excellent performance

1) Curriculum

Areas within the university	C1	C2	C3	C4	C5	C6	C7	C8	Score(/32) % of total score
Design and Manufacturing Systems	2	,0	0	3	3	4	,0	0	(12) 37.5
ICT									
Env. Science & mgmt	3	3	3	2	3	2	3	3	(22) 68.7
Cognition, Learn, & Educ	3	1	0	2	1	1	1	1	(10) 31.2
Petroleum Engineering	1	„0	„0	„0	„0	„0	„0	„0	(1) 3.1
Perform. Arts	0	0	0	0	0	0	0	0	0
Criminology & Public Safety	3	3	0	3	4	<0	3	3	(19) 59.4
BAFT	3	4	0	4	4	4	2	1	(22) 68.6

2) Teaching Approach

Areas within the university	9a	9b	9c	9d	9e	T10	T11	Score (/28) % of total score
Design and Manufacturing Systems	0	0	0	0	0	0	0	0
ICT								
Environmental Science & Management	3	2	2	2	2	3	3	(17) 60.7
Cognition, Learning and Education	3	3	3	3	3	3	3	(21) 75
Petroleum Engineering	2	3	3	2	3	2		(15) 53.6
Performing Arts	4	4	4	4	4	4	4	(28)100
Criminology and Public Safety	0	0	0	0	0	3	4	(7) 25
BAFT	2	3	3	3	3	4		(18) 64.3

3) Teaching Resources

Areas within the university	Questions			Score (/12)	% of total score
	TR12	TR13	TR14		
Design and Manufacturing Systems	1	2	<0	3	25
ICT					
Environmental Science & Management	3	2	2	7	58.3
Cognition, Learning and Education	<0	1	1	2	16.7
Petroleum Engineering	<0	<0	<0	<0	<0
Performing Arts	<0	4	<0	4	33.3
Criminology and Public Safety	<0	3	1	4	33.3
BAFT	1	1	1	3	25

4) Research and Scholarship Activities

Areas within the university	Questions				Score (/16)	% of total score
	R15	R16	R17	R18		
Design and Manufacturing Systems	3	3	<0	0	6	37.5
ICT						
Environmental Science & Management	3	2	1	1	7	43.7
Cognition, Learning and Education	1	1	0	0	2	12.5
Petroleum Engineering	<0	1	<0	<0	1	6.2
Performing Arts	<0	0	0	0	0	0
Criminology and Public Safety	3	2	1	3	9	56.2
BAFT	2	2	1	1	6	37.5

5) Service Activities

Areas within the university	Questions			Score (/12)	% of total score
	S19	S20	S21		
Design and Manufacturing Systems	0	<0	<0	0	0
ICT					
Environmental Science & Management	2	3	3	8	66.7
Cognition, Learning and Education	1	1	1	3	25
Petroleum Engineering	<0	<0	<0	<0	<0
Performing Arts	<0	<0	<0	<0	<0
Criminology and Public Safety	2	1	3	6	50
BAFT	2	3	3	7	58.3

6) Staff Expertise and Willingness

Areas within the university	Questions			Score (/12)	% of total score
	E22	E23	E24		
Design and Manufacturing Systems	4	4	4	12	100
ICT					
Environmental Science & Management	2	3	3	8	66.7
Cognition, Learning and Education	1	<0	<0	1	8.3
Petroleum Engineering	<0	1	2	3	25
Performing Arts	<0	<0	<0	<0	<0
Criminology and Public Safety	1	4	4	9	75
BAFT	3	4	4	11	91.7

The results were summarized for i) each Area within the University and also ii) an overall summary was given for each section of the questionnaire in Part A.

I. Summary for each Area within the university

Centre for BAFT

This Centre shows substantial involvement in dealing with issues related to sustainability in all sections of the questionnaire. The teaching approach utilized appears to be quite effective in developing and encouraging the capacities outlined throughout the **Teaching Approach** section of the questionnaire, however the teaching resources are limited. There is adequate international collaboration in this field, service activities are adequate and the staff expertise and willingness are substantial in the area of sustainability.

The Institute of Criminology and Public Safety

Specific courses on sustainability are not currently available in this institute. However, social sustainability is a key component in this area of study where there is a heavy focus on “creating a just and peaceful society”. Interestingly enough, although results from the questionnaire indicate that the curriculum presently in use appears to incorporate substantial focus on issues of sustainability from a social perspective, it would seem that the teaching approach used, falls short of contributing to the capacities outlined in question T9 for the students, although responses to questions T10 and T11 were quite favourable. Despite there being a shortage of staff trained in the area of sustainability, there seems to be great willingness and interest by members of the institute to participate

in proposed upcoming ventures which deal with sustainability. There is adequate international collaboration in this field.

The School of Cognition, Learning and Education

Sustainability is tackled in certain areas namely Primary Education, Agricultural Science, Integrated Science, Social Studies and Geography. There are some courses under three (3) of these (Agricultural Science, Integrated Science and Geography) which are compulsory, ensuring that students are exposed to some measure of sustainability issues. Project work, internship programmes and service activities that deal with challenges surrounding sustainability are undertaken mainly by students who pursue the aforementioned areas of education. Overall, in all areas of Specialization that fall under this School, the teaching approach utilized appears to be quite effective in developing and encouraging the capacities outlined throughout the **Teaching Approach** section of the questionnaire.

Environmental Science and Management Masters Programme

This Masters Programme shows substantial involvement in dealing with issues related to sustainability in all sections of the questionnaire.

Centre for ICT

Please note here that when the questionnaire was completed, the rating scale was not used, so the following information was obtained **ONLY** from “the Comments Section” in the questionnaire. Focus on sustainability seems limited to Environmental Engineering, an inter-disciplinary degree programme. With respect to the teaching approach used, the faculty encourages good human relationships and engages in regular international collaboration with a diverse group both technically and socially. There is willingness by staff to address sustainability topics in the classroom despite the shortage of facilitators within the Centre with appropriate expertise. In general, work in the areas of sustainability is undertaken to a very limited extent.

Design and Manufacturing Systems Programme

Sustainability is a key component of study in the Design and Manufacturing Systems Programme based on results obtained for the **Curriculum** section of the questionnaire. However, similar to the Criminology and Public Safety Institute, the teaching approach undertaken proves ineffective in encouraging the students in the development of the capacities highlighted. Evidence shows that there is a reasonable level of collaboration with international Universities focusing on sustainability. Challenges related to sustainability are undertaken in research and final year projects in this area of study. Although very limited, there are members of staff present who are very experienced in the area of sustainability and issues that relate to it. Enthusiasm towards addressing this area is excellent by the members of the Programme.

The Academy for the Performing Arts

Based on results obtained for the **Curriculum** section of the questionnaire, sustainability is not dealt with in the field of the Performing Arts. However, the teaching approach of the lecturers is highly effective and seems to be geared towards developing the capacities

of the students as listed in the questionnaire.

Petroleum Engineering Programme

There appears to be limited to no emphasis on issues concerning sustainability under this programme with only a focus on the technical aspects of Petroleum Engineering. The overall teaching approach seems to be adequate with assisting in the development of the capacities highlighted in question T9. Evidence shows that there is a little amount of collaboration with international Universities focusing on sustainability.

II. Overall summary for each section of the questionnaire

Indicator - Curriculum

It seems that the curricula which have substantial focus or interest in the area of sustainability are present in i) the Centre for BAFT, ii) the Institute of Criminology and Public Safety, iii) the Masters Programme in Environmental Science and iv) the Design and Manufacturing Systems Programme. Little focus exists in sustainability in the areas of ICT and the School of Cognition, Learning and Education. No focus is currently placed on sustainability in the curricula of the Academy for the Performing Arts and the Petroleum Engineering programmes.

Indicator – Teaching Approach

Comments indicate that a great deal of emphasis is placed on the teaching approach used in the area of the Performing Arts. The technique used is aimed at encouraging students to develop the skills and capacities outlined in the questionnaire as well as nurturing the human relationships within a multi-cultural society. Results and comments for the areas of BAFT, Environmental Science and Management, Cognition, Learning and Education and Petroleum Engineering indicate that the present teaching approach undertaken proves to be quite effective in developing and assisting with the fostering of students' capacities and self-esteem etc. Although in the case of Criminology and Public Safety, development of the students' capacities is not encouraged as in the other fields, the teaching approaches utilized by the lecturers contribute greatly to fostering the students' self-esteem and preparation for life. The teaching approaches utilized for Design and Manufacturing Systems do nothing to assist with developing the students in the capacities highlighted with little evidence of support with preparation for life in a multi-cultural society.

Indicator – Teaching Resources

In general, the Environmental Science and Management Masters Programme and the Criminology and Public Safety Institute show that adequate technical resources are available to students to support the programmes that are offered. Weak to moderate levels of performance have been indicated for BAFT, Cognition, Learning and Education, ICT and Design and Manufacturing Systems. Information concerning the availability of teaching resources highlighted in the questionnaire was unknown in the areas of Petroleum Engineering and the Performing Arts. However, faculty in the Academy of the Performing Arts engage in high levels of collaboration with other local schools nationwide, however not adequately in the area of sustainability.

Indicator – Research and Scholarship Activities

Overall, evidence shows that faculty in the Petroleum Engineering Programme and the Academy for the Performing Arts are not involved in Research and Scholarship activities related to sustainability. Very little work is done in the area of research and scholarship activities for the School of Cognition, Learning and Education. There are adequate levels of involvement in research within the Centre for BAFT, the Criminology and Public Safety Institute, in the Environmental Science and Management Masters programme, ICT and Design and Manufacturing Systems.

Indicator – Service Activities

There are relatively high levels of involvement in the service activities related to sustainability in the Centre for BAFT and the Environmental Science and Management Masters Programme. Evidence indicates that adequate participation in service activities is undertaken by staff and students of the Criminology and Public Safety Institute. Little contribution is made in the field of ICT and the School of Cognition, Learning and Education. It is unknown whether or not services related to local sustainability issues faced by the community are available or offered within the Academy for the Performing Arts, the Petroleum Engineering and the Design and Manufacturing Systems Programmes.

Indicator – Staff Expertise and Willingness

It is quite clear that high levels of expertise and a willingness to address topics concerning sustainability are possessed by staff members of the Design and Manufacturing Systems Programme and the Criminology and Public Safety Institute as well as in BAFT and the Environmental Science and Management areas. In the fields of Petroleum Engineering and ICT, the levels of expertise in the area of sustainability are low with partial willingness to engage in the teaching of sustainability. Although there is evidence of some evidence of expertise for the Cognition, Learning and Education area, evidence of willingness to address challenges related to sustainability remains unknown. No information is available regarding the expertise or interest by the staff of the Performing Arts

Part B- Management and Operations

NB:

- i. the value X in the Rating Scale has been replaced by <0 in the following 9 sections
- ii. Each question has a possible total score of 4

1) Planning and Coordination

Areas within the University	Questions						Score (/24)	% of total score
	P1	P2	P3	P4	P5	P6		
Capital Projects and Physical Infrastructure	2	3	3	1	2	1	12	50
Student Services	1	1	<0	0	0	0	2	8.3

2) Human Resources

Areas within the University	Questions						Score (/24)	% of total score
	HR7	HR8	HR9	HR10	HR11	HR12		
Human Resources	0	0	2	3	0	0	5	20.8
Student Services	0	1	1	0	0	0	2	8.3

3) Building and Grounds

Areas within the University	Questions			Score (/12)	% of total score
	B13	B14	B15		
Capital Projects and Physical Infrastructure	3	3	2	8	75
Student Services	0	<0	1	1	8.3

4) Waste Management

Areas within the University	Questions					Score (/20)	% of total score
	W16	W17	W18	W19	W20		
Capital Projects and Physical Infrastructure	2	2		3	2	9	45
Waste Management	1	1	3	1	0	6	30
Student Services	0	1	0	0	0	1	5

5) Energy Management

Areas within the University	Questions			Score (/12)	% of total score
	EM21	EM22	EM23		
Capital Projects and Physical Infrastructure	1	2	2	5	42
Student Services	0	1	0	1	8.3

6) Water Management

Areas within the University	Questions			Score (/12)	% of total score
	WM24	WM25	WM26		
Capital Projects and Physical Infrastructure	2	2	2	6	50
Student Services	0	0	0	0	0

7) Financial

Areas within the University	Questions			Score (/12)	% of total score
	F27	F28	F29		
Student Services	0	0	0	0	0

8) Public Engagement

Areas within the University	Questions		Score (/8)	% of total score
	PR30	PR31		
Student Services	0	0	0	0

9) Diversity

Areas within the University	Questions			Score (/12)	% of total score
	D32	D33	D34		
Student Services	2	3	1	6	50

Overall summary for each section of the questionnaire

In general, very little information was obtained for this section. Within the information given, there was a large discrepancy between most of the results obtained from staff from different areas in Management and Operations at UTT. It would be most beneficial to get input from more staff to try and get a better idea as to views regarding the existence of sustainability or not in this key area at UTT. Some consensus was seen in views expressed in i) Human Resources [questions HR 7, 11, 12] and in ii) Energy Management [question EM21].

For those areas where only one staff member responded, the view was that there is no evidence of sustainability present in the areas of Finance and Public Engagement.

Part C-Student Involvement

NB:

- i. the value X in the Rating Scale has been replaced by <0 in the following 3 sections
- ii. Each question has a possible total score of 4

1) Student Life

Campuses within the University	Questions				Score (/16)	% of total score
	SL1	SL2	SL3	SL4		
Maritime	2	<0	<0	2	4	25
Pt Lisas		0	0	<0	0	0

2) Student organization and government

Campuses within the University	Questions				Score (/16)	% of total score
	SG5	SG6	SG7	SG8		
Maritime	4	3	3	3	13	81.2
Pt Lisas	1	1	2	0	4	25

3) Student Learning Outcomes

Campuses within the University	Questions					Score (/20)	% of total score
	SO9	SO10	SO11	SO12	SO13		
Maritime	2	1	4	4	3	14	70
Pt Lisas	1	2	1	2	2	8	40

Overall summary for each section of the questionnaire

In general, very little information was obtained for this section. Again, one needs to note that the time period during which the information was collected was final exams for the students. This was a key factor in the poor response from the student body (12% response rate). Information obtained here is from two (2) campuses. For the section ‘student life’ there was consensus in that there is no emphasis placed on sustainable practices or initiatives. There was also consensus in that it was felt that students are able to contribute adequately to providing practical solutions to real world sustainability challenges.

Given the large differences between the ‘workings’ of the seventeen (17) campuses of UTT, it would not be feasible to extrapolate the results obtained from only two (2) campuses to the remainder. More information is needed to reach any useful conclusions regarding sustainability from the student perspective.

Acknowledgements

I would like to thank all staff and students at UTT who took the time to complete the questionnaires and submit the required information. Most importantly I would like to thank Mrs. Myrna Brathwaite and Ms Donna-Marie Jarvis for their help in compilation of the data collected.

Rachael Williams.

**MAINSTREAMING ENVIRONMENT AND SUSTAINABILITY
IN CARIBBEAN UNIVERSITIES (MESCA)**

AUDIT REPORT

THE UNIVERSITY OF THE WEST INDIES, MONA

Eleanor Williams and Marceline Collins-Figueroa

2010

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Executive Summary

Our aim in conducting this audit was to arrive at a baseline assessment of key indicators related to environment and sustainability (E & S) on the Mona campus of the University of the West Indies (UWI). A major challenge in obtaining generalisable results, was posed by the small sample that we obtained, especially of academic staff, which can be attributed to a number of factors: insufficient 'buy-in' from members of the populations sampled, which rendered participation in this audit a relatively low priority; lack of understanding of the meaning of the term 'sustainability,' which led to reluctance to participate and give 'uninformed' answers (we attempted to address this by communicating a definition of sustainability based on the three pillars of environment, society and economy to all those we approached for feedback); unfortunate timing, in that the audit tool was distributed around examination time, when the university community is heavily preoccupied with academic work; and reluctance on the part of members of the university community, especially those employed in the teaching, research and community service areas, to report negatively on the university's measures toward sustainability.

An audit tool consisting of three instruments was used. Part A sampled academic respondents' views on teaching, research and community service for environment and sustainability. Part B sampled professional and administrative staff opinions on management and operations for E & S. Part C sampled students' perspectives of their lives, their organization and their learning outcomes in E & S.

Part A – Teaching, Research and community Service

The teaching approaches for learning sustainability concepts and skills used by academics were rated highly in the audit. However, respondents from the Faculty of Humanities and Education reported the lowest aggregate score (see Table 1), especially in the "Curriculum" and "Teaching Resources" sections. The Institute for Sustainable Development (ISD) reported the highest scores overall, but especially in the area of Staff Expertise and Willingness. This seems like a clear opportunity then, for more synergistic endeavours between the ISD and other faculties, e.g. the Faculty of Humanities and Education, which, along with the Faculty of Medical Sciences, recorded some of the lowest scores overall. The Humanities and Education respondents, most of whom are affiliated with CARIMAC and the Institute of Education – two critical entities for the dissemination and generation of information regarding sustainability, saw the need for sustainability related issues to form a direct component of the core competencies of all students and faculty members. The low overall scores for research and scholarship in sustainability given by respondents from the faculties of Humanities and Education, Medical Sciences and Social Sciences corroborates the perception of low expertise of staff in sustainability and begs for attention to sustainability issues in these faculties; however, although staff may be willing to implement sustainability teaching and research, the low score for the extent of development opportunities and rewards for such endeavours may be a drawback unless due attention is paid to relevant incentives. Students and communities will benefit greatly if areas of sustainability are utilized in selection of services to the community and student internships geared towards learning for the development of problem solving skills to solve community problems. There is also a great need for the development of interdisciplinary programmes on environment and sustainability that could be accessed by students

from across all faculties; and perhaps, collaboration with other universities may be a good conduit for advances in this area.

Part B – Management and Operations

Only in the areas of Diversity, Public Engagement, and Buildings and Grounds was performance rated as reasonable overall. In all the other sections, responses indicated perceptions of poor performance on the part of the University, although respondents felt that the university's policies pay attention to principles of sustainability. It may be that policy is not adequately put into practice. The data show that there is significant room for improvement, particularly in the areas of Human Resources, Water and Waste Management, as well as the need to increase awareness among university staff of the financial practices and principles employed by the institution. We can begin by orienting staff in HR, staff in the Instructional Development Unit and new staff to sustainability. In energy conservation, where the authors know that much work has been done on energy audits, conservation and efficiency, staff in the departments seem unaware of and uninvolved in the university's efforts. This, again, highlights the need for heightened awareness among university staff of what the university is doing, and in participating in the planning and implementation of operations in sustainability.

Although a sample of 28 is small, it should be noted that many respondents were senior level staff from a spread of 24 departments. The data this provide a starting point for continuous evaluation of the progress UWI, Mona, makes on sustainability in management and operations.

Part C – Students

With an overall mean score of 1.87 out of 4, it is clear that students do not perceive that the UWI is performing adequately in environment and sustainability in relation to them. Much needs to be done by the students themselves and by the university to facilitate students in leading sustainable lifestyles, especially in Halls of residence; and in ensuring that their orientation, learning outcomes, and career counselling include connections to environment and sustainability. Of importance also, would be education that improves students' ethical perspectives in relation to environment and sustainability. It is noteworthy that students, especially those in Pure and Applied Sciences, and Social Sciences perceived their organization and governance to be adequate, with voluntary community service receiving the highest score. They also felt that they were developing technical skills and expertise to employing solutions to sustainability challenges. These data encourage optimism for the development of sustainability initiatives through academic programmes and campus student organizations.

Results indicate that there is room for improvement in numerous areas. In moving forward to mainstream E & S, it seems clear that areas will need to be addressed from a holistic standpoint. While budgetary constraints pose restrictions to some types of initiatives, there are other ways that the university can respond almost immediately to address shortfalls; for instance, through increased collaboration between relevant units, by raising awareness of what is already being done toward sustainability on campus, and by making more efficient use of the resources that are already available.

Recommendations include the following:

1. A forum should be held of key, interested representatives from among all staff and students to discuss what is happening in E & S on the campus, to discuss the findings of this audit, and to chart the way forward for prioritizing and mainstreaming E & S on the UWI, Mona campus, in areas of policy, curriculum, teaching, research, and community links; and, in university management, operations, and student life.
2. An action plan should be developed as a result of the forum to operationalize plans for future work in E & S and for seeking funds for E & S initiatives.
3. Focal points made up of interested persons, with relevant expertise should be institutionalised to initiate, develop and implement plans for E & S.
4. The audit reveals that staff, especially those of the ISD, have the expertise and are willing and able to assist in developing E & S in cross-faculty and cross-sectoral initiatives on the campus, especially in curriculum and operations. Internal networks should therefore be activated to include staff with expertise in further developing interdisciplinary programme(s) in E & S, and in facilitating the integration of E & S in curriculum and research of existing and new programmes.
5. Special priority should be given to facilitate the integration of E & S in student life and their ethical perspectives, existing student organizations, and student learning outcomes.

Introduction to the University of the West Indies, Mona

The University of the West Indies was established in 1948. Originally, it was an external College of the University of London, and became independent in 1962. It presently consists of three physical campuses with headquarters at Mona, Jamaica; St. Augustine in Trinidad and Tobago, and Cave Hill in Barbados; and an open campus. It comprises over 56,000 students across the four campuses.

UWI, Mona is situated on 653 acres of land and consists of the faculties of Pure and Applied Sciences, Humanities and Education, Social Sciences, Medicine, and Law. It comprises over 15,000 students of which over 70% are females; and over 2000 employees of which approximately 42% are academic staff.

The main stated aim of the UWI is to “unlock the potential for economic and cultural growth in the West Indies”.

Audit Report

Background

The UWI, Mona, is one of twelve universities that were present at a Mainstreaming of Environment and Sustainability in Caribbean Universities (MESCA) workshop that was held at UWI, Mona in September, 2009. The thirty three participants from the universities present recommended that environment and sustainability should be mainstreamed in their universities. A decision was made to audit each university to ascertain the universities’ readiness for this. With funding from the United Nations Environment Programme (UNEP), the audit was planned to take place between January and July of 2010.

An audit tool that was used by the Mainstreaming of Environment and Sustainability in African Universities (MESA) was adapted for use in MESCA through on-line discussions among representatives of six Caribbean universities.

Objectives and scope of the audit

The objectives of the audit exercise were to:

1. Identify the extent to which sustainability issues, concerns and practices are part of the university’s programmes, operations, and students’ organization and life;
2. Provide a baseline for action plans that would address environment and sustainability in the university.

The data provided through the audit sought to give information on respondents’ perceptions of the university’s strengths and weaknesses in regard to E & S. that could be used for comparisons among Caribbean universities presently and over time. It was hoped that the exercise would raise awareness of sustainability concerns and practices among those supplying information for the audit.

It was hoped that the twelve universities with representatives who attended the workshop would be audited. However, only four universities, including UWI, Mona, were able to complete the audit at the time of writing this report.

Concept of sustainability

The concepts of sustainability and sustainable development are problematic and are conceptualized differently by many. It was therefore necessary for the audit tool to be introduced with a common understanding of the term sustainability. In this exercise, sustainability encompasses the three pillars of ecology/environment, society and economy. In relation to education, sustainability is considered to be a form of education that engages students in content, skills, attitudes and practices involving sustainability issues. Conceptually and procedurally, this form education will facilitate growth in students' and their facilitators' expertise to use natural resources of the Earth more efficiently; in how to create and nurture socially just, peaceful, and prosperous societies, and the appreciation that humans and nature form a holistic system. Through education for environment and sustainability, students are enabled to attend ethically to environmental, social and economic problems and issues, and to live sustainable lifestyles. In terms of university management and operations, it is expected that "green practices" will be pursued to ensure safe, just and efficient operations through participatory decision making that contributes to community well-being.

The Audit Tool

The audit tool was adapted from one used by MESA – mainstreaming of Environment and Sustainability in African Universities through discussion by representatives from the universities within MESCA.

The tool has three sections that are administered separately.

Part A: focuses on teaching, research and community service. It is administered to academic staff;

Part B: focuses on university management and operations and is administered to management, professional and administrative staff;

Part C focuses on student involvement and is administered to students.

Each part has a number of indicators, to which respondents were required to give a score on a 5-point scale: 0-4, accompanied by comments on each indicator. See Audit tools as Appendices A, B and C.

The following report gives more detail on the three audit instruments – parts A, B and C, and how data were collected. Quantitative results and comments by respondents are presented separately for Parts A, B and C.

Part A – Teaching, Research and Community Service

Sampling Method

To create awareness, a description of the MESCA project was presented to the University's Academic Board by Professor Zellynne Jennings-Craig a few weeks before data collection was to commence. Following this, an electronic notice with a request for participation was posted on Mona Messaging, the campus intranet used by faculty, staff and students. Researchers then prepared packets for each Academic Department, containing a cover letter and an Audit Tool for each faculty member. These were delivered to the Department Administrators, who were briefed on the nature of the project and asked to distribute the Audit Tool and serve as the collection point for their respective departments.

When the time came to collect the completed surveys, responses were scant, so the deadline was extended and the Department Heads were approached to send out a call to their academic staff, requesting completion of the surveys. Despite continued follow-ups and reminders, only 28 completed Audit Tools were collected, out of 332 distributed copies (8.43% participation).

A number of reasons were advanced by lecturers when asked about their reluctance to participate. Some said they were busy with examination marking, others felt they did not know enough about sustainability in general, or about the extent to which sustainability initiatives were being implemented in their department/faculty, to give an informed opinion. Others indicated that because their results and comments may contribute toward an unfavourable picture of their department, they preferred not to participate.

Sample

The breakdown of the sample by faculty is illustrated in Figure 1.

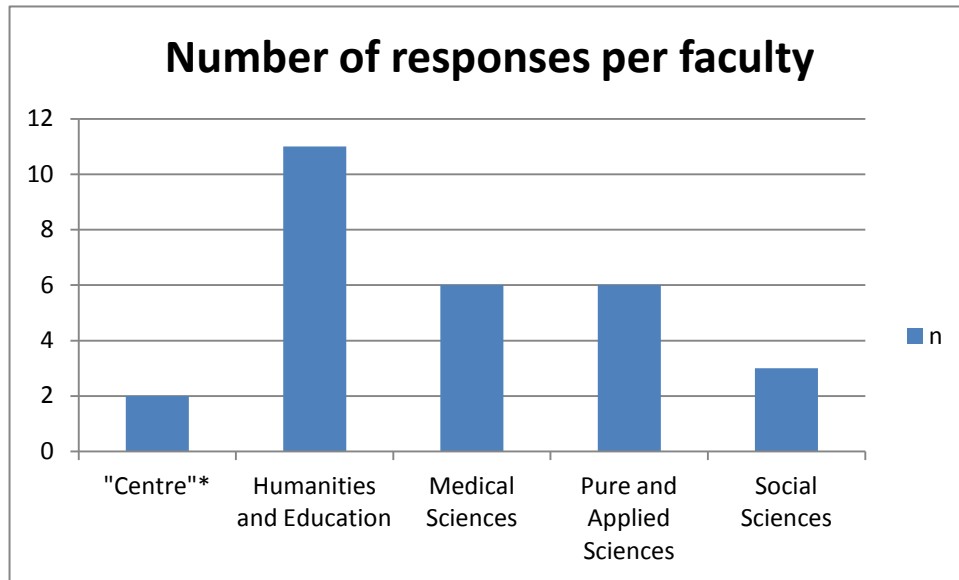


Figure 1: Part A – Teaching, Research and Community Service – number of responses per faculty sampled

*Centre refers to the Institute for Sustainable Development (ISD). Two responses were received from staff members at this Institute that services all campuses of the UWI.

We received no feedback from the Faculty of Law. In addition, within the faculties sampled, not all university departments are represented. What follows is a breakdown of departmental representation within each faculty.

Faculty of Humanities and Education

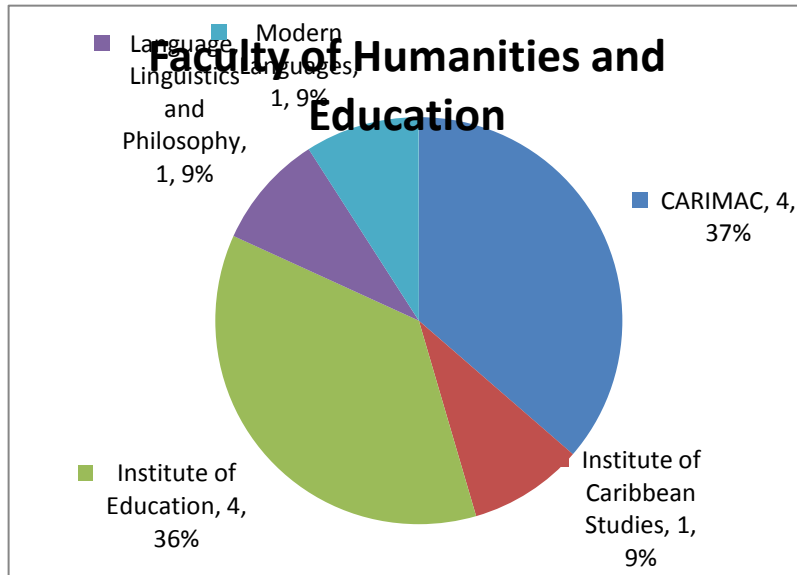


Figure 2: Part A – Teaching, Research and Community Service – departmental representation, Faculty of Humanities and Education

CARIMAC is the Caribbean Institute for Media and Communications. The following departments and entities within the Faculty of Humanities and Sciences are NOT represented: Library and Information Studies; History and Archaeology; Literatures in English; and the Department of Educational Studies of the School of Education.

Faculty of Medical Sciences

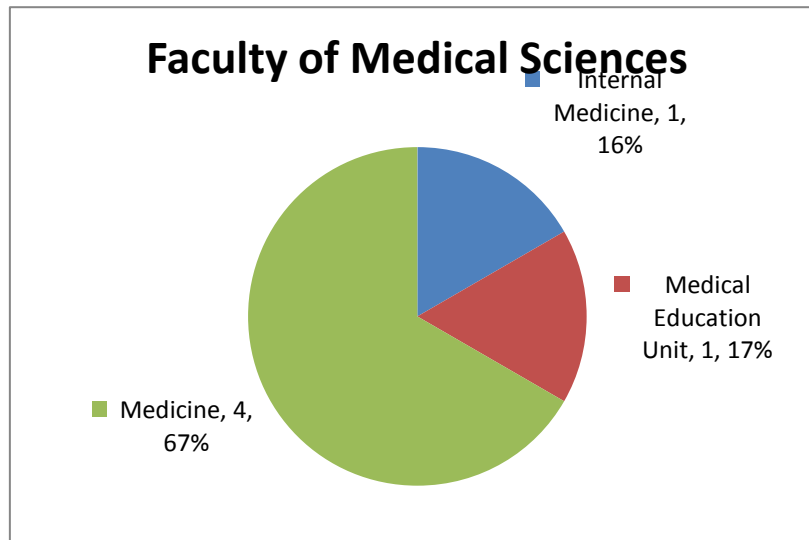


Figure 3: Part A – Teaching, Research and Community Service – departmental representation, Faculty of Medical Sciences

Within the Faculty of Medical Sciences, the following departments and entities are not represented: The UWI School of Nursing; Department of Basic Medical Sciences; Department of Community Health and Psychiatry; Department of Obstetrics, Gynaecology and Child Health; Department of Pathology; Department of Radiology; Department of Biochemistry.

Faculty of Pure and Applied Sciences

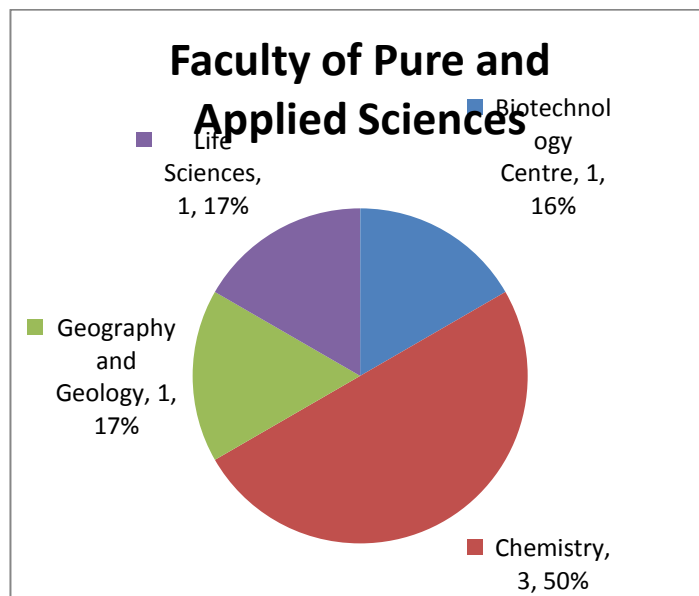


Figure 4: Part A – Teaching, Research and Community Service – departmental representation, Faculty of Pure and Applied Sciences

The following departments and entities from within the Faculty of Pure and Applied Sciences are not represented in the results: Centre for Marine Sciences; Mathematics and Computer Science; Department of Physics; Occupational and Environmental Safety and Health (OESH).

Faculty of Social Sciences

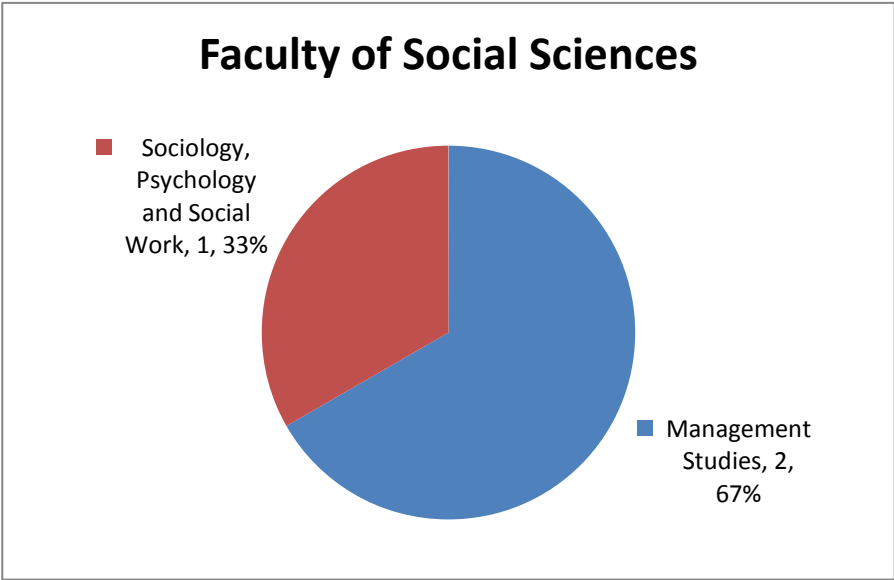


Figure 5: Part A – Teaching, Research and Community Service – departmental representation, Faculty of Social Sciences

Within the Faculty of Social Sciences, the following departments and entities are not represented: Centre for Hotel and Tourism Management; Department of Economics; Department of Government; Sir Arthur Lewis Institute of Social and Economic Studies; Mona School of Business

Instrument

Part A of the Audit Tool was divided into six sections: 1) Curriculum (8 questions), 2) Teaching Approach (3 questions – of which the first one was separated into 5 parts), 3) Teaching Resources (3 questions), 4) Research & Scholarship Activities (4 questions), 5) Service Activities (3 questions), and 6) Staff Expertise & Willingness (3 questions). See Appendix B.

The following rating scale was used:

Assessment Indicator Rating Scale	
Score:	
X	Don't know/no information concerning this
0	None/there is total lack of evidence on this indicator
1	A little/evidence shows poor performance
2	Adequate/evidence shows reasonable performance
3	Substantial/evidence shows good performance
4	A great deal/excellent performance

Results and Discussion

Table 1: Part A – Teaching, Research and Community Service – Arithmetic means for each section, by faculty

Faculty	n=	Curriculum	Teaching Approach	Teaching Resources	Research & Scholarship Activities	Service Activities	Staff Expertise & Willingness	Mean
Institute for SD	2	3.38	3.36	2.67	3.88	3.5	4	3.45
Humanities and Education	11	1.17	2.93	1.46	1.3	1.24	2.57	1.82
Medical Sciences	6	1.36	3.17	1.87	1.06	1.57	1.69	1.88
Pure and Applied Sciences	6	1.78	2.74	2.33	2.6	2.44	2.83	2.38
Social Sciences	3	1.69	3.38	2	1.21	2	2	2.14
Total Sample/Mean	28	1.61	3.02	1.91	1.82	1.92	2.55	2.16

Not surprisingly, the respondents from the Institute for Sustainable Development (ISD) recorded the highest scores in every section. Within the ISD, the highest scoring section was Staff Expertise and Willingness (4), followed by Research & Scholarship Activities (3.88).

We will now discuss each section of Part A of the audit tool in turn.

Section 1 – Curriculum

Overall, this was the lowest scoring section, receiving the lowest score from the Faculty of Humanities and Education (mean=1.17, n=11), and the highest from the Institute for Sustainable Development (ISD [mean = 3.38, n=2]). (see Table 1). It should be noted that with the exception of the ISD, no faculty indicated reasonable performance overall for this section.

Table 2: Part A – Teaching, Research and Community Service – Arithmetic means for ‘Curriculum’ section, by faculty

Faculty	n=	C1	C2	C3	C4	C5	C6	C7	C8	Curriculum mean
Institute for SD	2	4	3.5	3	4	1.5	3.5	3.5	4	3.38
Humanities & Education	11	1.33	1.38	0.5	1	1.71	1.67	1.3	0.44	1.17
Medical Sciences	6	1.4	2.67	0.75	1.4	1	1.5	1.67	0.5	1.36
Pure & Applied Sciences	6	1.67	2	1	1.2	2.33	1.83	2.67	1.5	1.78
Social Sciences	3	2.5	2	0	1	4	3	1	0	1.69
Total Sample/Mean	28	1.75	2	0.94	1.29	2	2	1.87	1.05	1.61

When the results from all faculties are taken into account, C3 and C8 were the lowest scoring questions within the section, scoring 0.94 and 1.05 respectively. C3 asks: “Is there an interdisciplinary degree programme/course in sustainability studies?”, and scores no higher than 1 (poor performance) in every faculty except the ISD, which scores it at 3 (good performance). C8 relates to the extent to which there are internships or work/study programmes on sustainability issues/topics available to students. While this question scored a 4 (excellent performance) from the ISD, among other faculties, the scores recorded range from zero (Social Sciences) to 1.5 (Pure and Applied Sciences, see Table 2).

The highest scoring questions in the Curriculum section were C2, C5 and C6, each with an overall mean of 2, indicating reasonable performance. C2 - What is the level of integration of sustainability topics in courses? – was rated highest by respondents from the ISD, (3.5 – good performance) followed by those from the faculty of Medical Sciences (2.67 - reasonable performance). The lowest mean for this question came from the faculty of Humanities and Education, which scored it at only 1.38.

C5 (How accessible are courses in sustainability studies to students?) is interesting because although it is one of the highest scoring questions in the section overall, it is the only one that received a score lower than 3 from the ISD, which rates it at 1.5 (poor performance). This question was scored highest by

respondents in the Faculty of Social Sciences, all three of whom gave it a 4 (excellent performance). It scored lowest in the faculty of Medical Sciences (1).

C6 refers to the extent to which students enrol in available courses that engage sustainability issues or topics. It was scored lowest by respondents in the Faculty of Medical Sciences (1.5 – poor performance) and highest (when ISD is excluded) by those in the Faculty of Social Sciences (which scored it a 3 – good performance).

Section 2 – Teaching Approach

Table 3: Part A – Teaching, Research and Community Service – Arithmetic Means for ‘Teaching Approach’, by faculty

Faculty	n=	T9A	T9B	T9C	T9D	T9E	T10	T11	Teaching Approach Mean
Institute for SD	2	3.5	3.5	3	3.5	3	3.5	3.5	3.36
Humanities & Education	11	2.9	3.18	2.9	3.5	2.8	2.5	2.73	2.93
Medical Sciences	6	3.33	3.17	3.5	3.33	3	2.83	3	3.17
Pure & Applied Sciences	6	3.17	3.17	3.17	2.17	2.5	2.67	2.33	2.74
Social Sciences	3	3	3.67	3.67	3.67	3.67	3	3	3.38
Total Sample/Mean	28	3.11	3.25	3.19	3.19	2.89	2.73	2.77	3.02

This is the section with the highest overall mean, at 3.02 - good performance (See Table 1). On aggregate, the highest score of 3.25 went to the question measuring the extent to which the lecturer’s teaching approach contributes to the development of students’ critical thinking skills. The lowest scores were reported for questions T10 (2.73) and T11 (2.77), which respectively address the extent to which the teaching approach contributes to fostering self-esteem and good human relationships in the students; and the extent to which the teaching approach helps to prepare students for life in a multi-cultural society. Thus it seems that these affective areas need to be addressed.

The Teaching Approach section received the lowest overall score (which was 2.74 - reasonable performance) from the respondents in the Faculty of Pure and Applied Sciences. Within that faculty, question T9D, measuring the extent to which the lecturer’s teaching approach contributes to the development of the capacity for respect for each other’s opinions in students, scored the lowest in this

section, at 2.17, which, although it indicates a reasonable performance, is still markedly lower than the scores recorded for the same question by the respondents from other faculties (see Table 3). This could possibly be attributed to the inherently empirical nature of the subject matter taught within the disciplines that comprise the Pure and Applied Sciences, where the line between ‘correct’ and ‘incorrect’ is more sharply defined than it would be in, say, the Humanities. However, scientific progress, in the form of continuing discovery and refinement of already existing theories and ideas, depends on a healthy level of inquiry and even dissent, therefore the feedback received here may warrant further investigation, and perhaps necessitate an increased level of support for lecturers as they attempt to improve their teaching approach in this regard.

Conversely, the faculty that scored the Teaching Approach section highest was the Faculty of Social Sciences, which rated every question above 3 (indicating good performance).

Section 3 – Teaching Resources

Table 4: Part A – Teaching, Research and Community Service – Arithmetic means for ‘Teaching Resources’, by faculty

Faculty	n=	TR12	TR13	TR14	Teaching Resources Mean
Institute for SD	2	1	3.5	3.5	2.67
Humanities & Education	11	0.83	2	1.56	1.46
Medical Sciences	6	1.33	2.67	1.6	1.87
Pure & Applied Sciences	6	1.6	3.2	2.2	2.33
Social Sciences	3	1	2.67	2.33	2
Total Sample/Mean	28	1.17	2.59	1.96	1.91

Of the three questions in this section, TR12 – To what extent are there staff development opportunities and rewards for sustainability initiatives? – was uniformly ranked lowest, at an overall mean of 1.17 - poor performance. It is worth noting that the respondents from the ISD, who have by and large reported relatively high scores, scored this the lowest of all 24 questions, at 1, indicating poor performance (see appendix, Figure A1). In fact, this is one of only two questions (the other being C5, which was discussed above, in the Curriculum section) where the ISD score was lower than the average score across all faculties.

TR13 was ranked highest, at 2.59 overall (indicating the perception of reasonable performance), and measures the extent to which communication facilities/collaboration opportunities with other universities/local and global agencies are present. This question – indeed all three questions in the Teaching Resources section – was scored lowest by the respondents from the Faculty of Humanities and Education, as is evidenced in Table 4. Thus, of all the faculties, the faculty of Humanities and Education gave this section the lowest rating – at 1.46 (poor performance). Actually, this section was rated poorly by most faculties sampled, the exceptions being the Institute for Sustainable Development (2.67) and the Faculty of Pure and Applied Sciences (2.33), both indicating reasonable performance.

Section 4 – Research and Scholarship Activities

Table 5: Part A – Teaching, Research and Community Service – Arithmetic means for ‘Research and Scholarship Activities’, by faculty

Faculty	n=	R15	R16	R17	R18	Research & Scholarship Mean
Institute for SD	2	4	3.5	4	4	3.88
Humanities & Education	11	1.88	1.9	0.71	0.7	1.3
Medical Sciences	6	0.75	2.5	1	0	1.06
Pure & Applied Sciences	6	3	2.33	2.4	2.67	2.6
Social Sciences	3	1.33	2	0.5	1	1.21
Total Sample/Mean	28	2.09	2.23	1.53	1.43	1.82

Respondents from the faculties of Medical Sciences and Social Sciences both rated this as their lowest scoring section (see Table 5 for comparison with other sections), at overall means of 1.06 and 1.21 respectively, both of which indicate poor performance.

The highest ranking questions (R15 and R16) scored 2.09 and 2.23 respectively – showing reasonable performance. These questions were concerned with the extent to which department staff and students are involved in research in the areas of sustainability; and the extent to which the department/unit is collaborating with other institutions/stakeholders in pursuit of solutions to sustainability issues.

The two that ranked lowest (at 1.43 and 1.53 respectively) were R18 and R17, which asked about the presence of a dedicated research institute/unit in the department that focuses specifically on sustainability topics; and the extent to which funding is accessed for research on sustainability. Note that the respondents from the Faculty of Medical Sciences indicated that they didn’t know enough to answer question R18.

Section 5 – Service Activities

Table 6: Part A – Teaching, Research and Community Service – Arithmetic means for ‘Service Activities’, by faculty

Faculty	n=	S19	S20	S21	Service Activities Mean
Institute for SD	2	3.5	3.5	3.5	3.5
Humanities & Education	11	1.25	1.63	0.86	1.24
Medical Sciences	6	1.6	1.6	1.5	1.57
Pure & Applied Sciences	6	2.5	2.67	2.17	2.44
Social Sciences	3	2	2	2	2
Total Sample/Mean	28	1.92	2.08	1.75	1.92

In general, with the exception of the ISD, which scored each question at a mean of 3.5 (good performance), most faculties indicated that this section demonstrates poor to reasonable performance. Thus, despite the favourable rating given by the ISD, overall, this section received an aggregate mean score of 1.92 (see Table 6), with all three questions having overall mean scores (across all faculties) hovering between 1.75 and 2.08.

The three questions asked were: S19 – To what degree do local sustainability issues/challenges form a part of the department or unit’s service in the community?; S20 – To what extent are the department’s staff and students involved in service activities in the area of sustainability?; and S21 – To what extent are areas of sustainability used in selection and execution of service to the community?

Once more, the Faculty of Humanities and Social Sciences stands out as the faculty that recorded the lowest scores for each question. Most notable is the fact that among the 11 respondents from that Faculty, question S21 scored only 0.86, which is even below poor performance and represents a lack of evidence on this indicator.

Section 6 – Staff expertise and willingness

Table 7: Part A – Teaching, Research and Community Service – Arithmetic means for ‘Staff Expertise and Willingness’, by faculty

Faculty	n=	E22	E23	E24	Staff Expertise & Willingness Mean
Institute for SD	2	4	4	4	4
Humanities & Education	11	2.71	2.57	2.43	2.57
Medical Sciences	6	1	1.75	2.33	1.69
Pure & Applied Sciences	6	2.67	2.83	3	2.83
Social Sciences	3	1.67	2	2.33	2
Total Sample/Mean	28	2.36	2.57	2.71	2.55

The three questions asked in this section are: E22 – What is the level of expertise of staff members in the area of sustainability? E23 – To what extent are staff members willing to carry out research/service activities on sustainability areas/issues/topics? And, E24 – To what extent are staff members willing to teach sustainability topics?

Respondents from the ISD gave their unit an excellent score for each of the three questions. However, those from the Faculties of Social Sciences and Medical Sciences respectively allocated rankings of 1.67 and 1 to question E22, indicating that there is definite room for improvement in the level of expertise on sustainability of staff members in those faculties. This is another clear instance where the resources (in this case, the human resources) available at the ISD could be used to greater effect – perhaps by sensitizing faculty members from other departments in specific issues related to sustainability.

Summary of respondents' comments

Introduction

We have attempted to draw out the main themes represented in the written comments supplied by respondents to the MESCA Audit Tool – Part A. This is intended to accompany the quantitative analysis in the previous section.

We will discuss the comments according to the departments from which they were received.

Institute for Sustainable Development

Sustainability is the core theme for the unit, so there is an MPhil/PhD in Sustainable Development, which is interdisciplinary and covers all dimensions of sustainability. Work is based on research, and not necessarily taught in courses. Communication and collaboration with other universities and agencies (e.g. the UN) is one of the unit's strongest points.

Improvement may be needed in terms of operations, e.g. water, electricity. The unit could also offer to assist other departments in instituting more sustainability-driven programmes and linkages.

Faculty of Humanities and Education

CARIMAC

At CARIMAC (Caribbean Institute of Media and Communication), sustainability related issues form part and parcel of the core curriculum. There is, however, a need for more or better focus on 'green' practices and climate change.

In terms of research and scholarship activities, particular areas receive more focus than others. In particular, 2 courses – Communication Analysis and Planning 1, and 2 – incorporate research in areas of sustainability. One of the respondents is CARIMAC's representative on CDEMA's Comprehensive Disaster Management sub-committee and the National Environmental Committee (NEEC's) sub-committee for Public Awareness and Education, which indicates that there is collaboration with other institutions and stakeholders.

More needs to be done with service/research in communities, as this is currently done in a very limited way.

Department of Language, Linguistics and Philosophy

There are no courses focused on sustainability offered in the English Language section of the Department. Occasionally the language courses integrate sustainability topics. Students doing double majors in language are not able to access courses in sustainability.

In terms of teaching approach, students are exposed to other cultures through language acquisition, and are trained to develop tolerance and understanding of cultural diversity.

The department also organizes and participates in exchange programmes with foreign universities.

Institute of Education

Customised courses on sustainability related issues are available as electives, and mainly for graduate students. Student enrolment in these is low.

Research in areas of sustainability takes place, but it happens on an individual level, according to lecturers' interests or areas of focus (e.g. biodiversity, HIVAids, environmental education, sustainable development and language arts). There is collaboration, but it lacks the pursuit of solutions. Through the Joint Board of Teacher Education (JBTE), some ESD themes have been studied in education. Some

individuals in the unit are involved in community service activities around biodiversity, HIV/AIDS whole school approaches, and citizenship.

Faculty of Medicine

Department of Medical Sciences

Respondents indicated that in the Medical Sciences, sustainability related topics form an inherent part of the core courses that students take in pursuit of the MBBS, and students are trained to address patients' well-being in socio-economic and socio-cultural contexts.

Similarly, the indicators represented in the Teaching Approach section (e.g. developing students' capacity to make informed decisions, develop critical thinking and problem solving skills, increase sense of responsibility, etc) are seen as an integral part of the training required in the Medical field.

In terms of teaching resources, to some degree there are student/faculty exchange programmes and collaborative research efforts, and there is a joint conference held annually.

Research in the areas of sustainability falls outside of the core interest area of most students and faculty in the department, however, research has been done on the management of medical disasters.

Members of the department offer their services to all categories of persons in different areas of society.

Faculty of Pure and Applied Sciences

Biotechnology Centre

The department does not offer undergraduate courses. Sustainability related issues are introduced to graduate students as part of their thesis requirements, which revolve around developing technologies to support sustainable livelihoods, but not as a taught course. Postgraduate students are not required to take courses in sustainability topics, and the level of accessibility of such courses is not known by the respondent.

There is not much opportunity for teaching students to develop the sustainability related capacities indicated, however, evidence of these aspects is considered in the reviewing of project proposals, the execution of projects, and the writing of theses.

Work/study programmes and staff development initiatives in sustainability related areas are not currently present but would be welcomed.

Extensive research and collaboration around sustainability takes place, as the centre is developing new technologies (e.g. tissue culture, value-added products for new sustainable industrial and farming enterprises) that directly address sustainability. The unit collaborates with RADA, NEPA, EFJ, FCF, USAID, etc, and all funds accessed for studies/research have been based on sustainable development.

Sustainability forms the core basis of community service by the centre, and takes place through collaboration with workgroups that address sustainability policy development, and farming groups across the country.

Staff expertise in the area of sustainability is good, though it could be better, and the respondent indicates that staff members would be willing to teach sustainability topics if given the opportunity.

Department of Chemistry

Some aspects of sustainability are included in the Environmental Chemistry course, which Applied Chemistry majors are required to do. Industrial Chemistry students do an internship, and some have projects on environmental/resource management.

Courses involve both group- and team work, which influences teaching approach. Data interpretation, using statistics and understanding data limitations are important in many assignments and reports. Many of these involve waste management, energy production or environmentally related topics. However, staff members do not teach specific topics on sustainability per se.

Collaboration and communication with other universities and agencies depends on the efforts of the individual. In terms of service projects, some environmental projects involve NGOs or schools. Selection of community service projects is driven mainly by the need for science education in society. Students participate in community service through their First Year Experience activities.

Summary/Conclusion

Teaching approaches for learning sustainability concepts and skills were rated highly in the audit. However, the Faculty of Humanities and Education reported the lowest aggregate score (see Table 1), especially in the “Curriculum” and “Teaching Resources” sections. As has been stated earlier, the ISD reported the highest scores overall, but especially in the area of Staff Expertise and Willingness. This seems like a clear opportunity then, for more synergistic endeavours between the ISD and other faculties, e.g. the Faculty of Humanities and Education, which, along with the Faculty of Medical Sciences, recorded some of the lowest scores overall. The Humanities and Education respondents, most of whom are affiliated with CARIMAC and the Institute of Education (see Figure 2) – two critical entities for the dissemination and generation of information regarding sustainability, saw the need for sustainability related issues to form a direct component of the core competencies of all students and faculty members. The low overall scores for research and scholarship in sustainability given by respondents from the faculties of Humanities and Education, Medical Sciences and Social Sciences corroborates the perception of low expertise of staff in sustainability and begs for attention to sustainability issues in these faculties; however, although staff may be willing to implement sustainability teaching and research, the low score for the extent of development opportunities and rewards for such endeavours may be a drawback unless due attention is paid to relevant incentives. Students and communities will benefit greatly if areas of sustainability are utilized in selection of services to the community and student internships. There is also a great need for the development of interdisciplinary programmes on environment and sustainability that could be accessed by students from across all faculties; and perhaps, collaboration with other universities may be a good conduit for advances in this area.

Part B – University Management and Operations

Sampling method

In order to receive responses from senior staff in a large number of departments across the campus, the researcher made appointments with members of professional and administrative staff to interview them face-to-face or over the phone. In this way, she was able to obtain 27 completed Audit Tools from a reasonable cross-section of departments on the University campus. Many of the respondents held senior positions in the departments. An additional completed tool was submitted by a respondent from the top administration who had completed it independently. We refer to this respondent as “X”.

Sample

Responses were drawn from a range of university departments. With the exception of the Bursary, with three respondents, the HR Division with two, and MITS also with two, each department was represented by the response of one individual, often a senior member of staff with knowledge of the operations of the department.

Table 8: Part B – University Management and Operations – Departmental Representation within Sample

Department	n=		
Agricultural Unit	1	X	1
Bursary	3	MITS	2
Campus Projects Office	1	Mona Visitors Lodge	1
Campus Records Management	1	Natural Products Institute	1
Chancellor Hall	1	Office of Graduate Studies (Pro-VC)	1
Commuting Students Office	1	Office of Student Services	1
Health Centre	1	Phillip Sherlock Centre	1
HR Division	2	Placement and Career Services	1
ICENS	1	PR Office	1
Library (Main)	1	Purchases (Bursary)	1
Maintenance (buildings)	1	Systems (Library)	1
Maintenance (sanitation)	1	Legal Unit	1

Instrument

The Audit tool consisted of 34 questions, divided into nine sections, namely: Planning and Co-Ordination; Human Resources; Buildings and Grounds; Waste Management; Energy Management; Water Management; Financial; Public Engagement; and Diversity (See Appendix C).

Results and discussion

Table 9: Part B – University Management and Operations – Arithmetic means for each section, listed by department

Department	n=	Planning & Co-	Human Resources	Buildings & Grounds	Waste Managem	Energy Managem	Water Managem	Financial	Public Engageeme	Diversity	Mean across all
X	1	1.83	1.33	2	2.2	2	2	2	2.5	2.33	2.02
Agriculture Unit	1	1.5	1.33	1.67	1.4	0.67	1.33	0	0.5	2.33	1.19
Bursary	3	2.08	1	2	1.67	2.06	1	1.5	2.25	3.06	1.85
Campus Projects Office	1	1.67	1.67	2.67	1.8	1.67	1.33	1	2	2	1.76
Campus Records Management	1	1.75	0.83	3.5	2	1.5	2	0	2.5	3.67	1.97
Chancellor Hall	1	3.25	1.83	2	1	1.33	2	1	2.5	3	1.99
Commuting Students Office	1	2.33	1.83	2	2.25	3	2	1	4	3.33	2.42
Health Centre	1	0.67	0.33	0.33	0.67	0	0	1	1	1	0.5
HR Division	2	1.5	1.75	2.5	2.1	2.67	2.67	2	1.5	2.5	2.13
ICENS	1	2.6	2.83	3.33	1.4	2	0.33	4	3.5	3.33	2.59
Legal Unit	1	0.67	0	1	1	1	1	1	1	2.67	1.04
Library (Main)	1	1.5	0.6	0.67	0.5	1.33	0.33	0	1	1.33	0.81
Maintenance (buildings)	1	0.6	0.4	1.33	0.5	1.5	2.33	2	3	1.33	1.44
Maintenance (sanitation)	1	2.17	1.83	2.33	1	3	1.67	2	1.5	3	2.06
MITIS	2	1.33	1.17	1.33	0.5	0.67	0.67	0	1	1.67	0.93
Mona Visitors Lodge	1	1.4	1.5	1.67	1.75	1	0.67	1.5	1	1	1.28
Natural Products Institute	1	2.17	1.5	2.33	2.8	2	2.33	2.5	3	3	2.4
Office of Graduate Studies	1	2.83	1.83	2.33	3	2.67	3.5	3	2.5	3.33	2.78
Office of Student Services	1	3.17	3.2	3.33	2.75	3.5	3	2.5	3	3.33	3.09
Phillip Sherlock Centre	1	0.67	0.5	1.67	0.75	1.67	0	0	1	1.5	0.86
Placement and Career Services	1	2.17	1.8	1.67	2.33	3	1	0	2.5	1.67	1.79
PR Office	1	2.17	1.5	3	1.75	1	1.5	2	2.5	2.67	2.01
Purchases (Bursary)	1	0.67	0.5	2	1.25	2	1		1	3.33	1.47
Systems (Library)	1	3	1.5	3	1.5	3	2.5	1.5	3	4	2.56
Total/Means	28	1.85	1.37	2.01	1.66	1.72	1.39	1.48	2.06	2.59	1.79

Table 10 above shows the arithmetic mean for each of the nine sections that comprise Part B of the Audit tool, for every department sampled. Since most departments (with the exception of the HR Division, the Bursary, and MITS with 2, 2, and 3 respondents respectively) are represented here by a single individual, we would be remiss in using this data to generalize about the perspectives held by an entire department or division. Therefore we will be discussing this part of the audit by section of the tool, not by university department.

The aggregated means associated with each section on the questionnaire are represented on Figure 6 below:

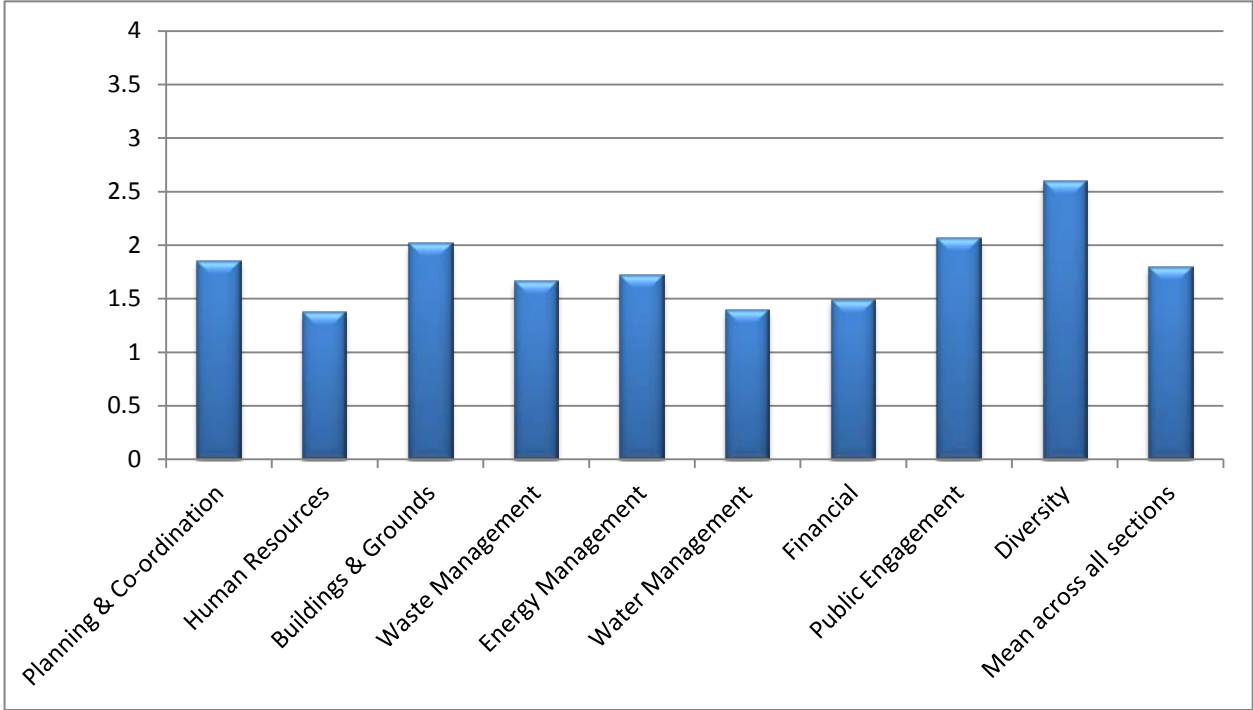


Figure 6: Part B – University Management and Operations – Means per section of tool, aggregated across all departments

Figure 6 illustrates that the only sections that obtained scores indicating reasonable performance (evidenced by a score of 2 or above) are: Buildings and Grounds, Public Engagement and Diversity. The other six sections all scored between 1 and 2 overall.

Planning & Co-ordination

The overall mean for this section was 1.85, indicating poor to reasonable performance. Individual department scores ranged from 3.25 (good performance) by the respondent from Chancellor Hall to 0.6 (lack of evidence) from the respondent from Maintenance (buildings). Within the section, the highest scoring question (at 2.57 – reasonable performance) was P3: To what extent do the objectives of the strategic and operational plans address the social, economic and environmental dimensions of sustainability; while the lowest scoring question, with a score of 0.75 (lack of evidence on this indicator) was P6, which is about the extent to which the campus fleet is fuel efficient or using alternatives.

Table 10: Part B – University Management and Operations – Arithmetic means for ‘Planning and Co-ordination’, by department

Department	n=	P1	P2	P3	P4	P5	P6	Planning and Co-ordination Mean
X	1	1	3	2	2	2	1	1.83
Agriculture Unit	1	2	2	2	1	1	1	1.5
Bursary	3	3.33	3	2.5	1.33	1.67	0.67	2.08
Campus Projects Office	1	1	1	2	2	2	2	1.67
Campus Records Management	1	3	X	3	X	1	0	1.75
Chancellor Hall	1	3	2	4	4	x	X	3.25
Commuting Students Office	1	3	3	4	1	2	1	2.33
Health Centre	1	2	1	1	0	0	0	0.67
HR Division	2	2	2	2	1	1	1	1.5
ICENS	1	0	4	4	3	x	2	2.6
Legal Unit	1	2	X	x	X	0	0	0.67
Library (Main)	1	2	2	2	2	1	0	1.5
Maintenance (buildings)	1	0	0	x	1	1	1	0.6
Maintenance (sanitation)	1	3	3	3	2	2	0	2.17
MITS	2	2	2	1.5	0.5	2	0	1.33
Mona Visitors’ Lodge	1	1	2	1	2	1	X	1.4
Natural Products Institute	1	2	2	3	2	3	1	2.17
Office of Graduate Studies	1	4	3	3	4	2	1	2.83
Office of Student Services	1	4	4	3	3	3	2	3.17
Phillip Sherlock Centre	1	0	0	2	1	1	0	0.67
Placement and Career Services	1	3	3	2	2	1	2	2.17
PR Office	1	3	3	4	2	0	1	2.17
Purchases (Bursary)	1	X	X	x	0	2	0	0.67
Systems (Library)	1	3	4	4	4	x	0	3
Total Sample/Mean	28	2.23	2.38	2.57	1.76	1.43	0.75	1.85

Human Resources

The overall mean for this section (1.37) indicates the perception of poor performance by the University in Human Resources related to sustainability initiatives. Even members of the HR department itself scored this section at only 1.75. Only two departments showed an average score of 2 (reasonable performance) or higher – those being ICENS at 2.83, and the Office of Student Services at 3.2 (good performance)

Table 11: Part B – University Management and Operations – Arithmetic means for ‘Human Resources’, by department

Department	n=	HR7	HR8	HR9	HR10	HR11	HR12	Human Resources Mean
X	1	1	1	1	2	1	2	1.33
Agriculture Unit	1	1	2	1	2	1	1	1.33
Bursary	3	1.33	0	0	1.67	1	2	1
Campus Projects Office	1	2	1	3	1	1	2	1.67
Campus Records Management	1	0	0	0	3	0	2	0.83
Chancellor Hall	1	4	2	1	1	1	2	1.83
Commuting Students Office	1	1	1	3	2	1	3	1.83
Health Centre	1	0	1	0	0	0	1	0.33
HR Division	2	1	1	3	2.5	1.5	1.5	1.75
ICENS	1	3	3	1	3	3	4	2.83
Legal Unit	1	X	x	0	X	0	0	0
Library (Main)	1	1	1	0	1	X	0	0.6
Maintenance (buildings)	1	0	0	2	X	0	0	0.4
Maintenance (sanitation)	1	2	4	0	2	0	3	1.83
MITS	2	1	1	0.5	1.5	0	3	1.17
Mona Visitors Lodge	1	1	1	2	1	3	1	1.5
Natural Products Institute	1	1	1	1	2	2	2	1.5
Office of Graduate Studies	1	1	1	3	3	2	1	1.83
Office of Student Services	1	X	3	1	4	4	4	3.2
Phillip Sherlock Centre	1	0	0	0	2	0	1	0.5
Placement and Career Services	1	2	2		2	1	2	1.8
PR Office	1	0	0	2	2	3	2	1.5
Purchases (Bursary)	1	0	0	1	1	0	1	0.5
Systems (Library)	1	2	0	0	3	0	4	1.5
Total Sample/Mean	28	1.15	1.08	1.07	1.92	1.07	1.89	1.37

Looking at the mean scores for the indicators, each one indicated poor performance, with scores ranging from 1.92 for HR10 (To what extent are staff compensation programmes present that take into account staff satisfaction, staff development, future job sustainability?), to 1.07 for HR9 (To what extent is there regular evaluation of employee job satisfaction?) and HR11 (To what extent is there present a system of staff/employee rewards for sustainability initiatives and service to the community?). It is worth noting that at an aggregated mean of 1.37, Human Resources was the lowest scoring of all nine sections that comprise Part B.

Buildings and Grounds

This section was scored at an overall mean of 2.01 (reasonable performance). The scores ranged from 3.5 (good performance), recorded by the respondent from Campus Records Management, to 0.33 (lack of evidence on this indicator), from the respondent at the Health Centre.

Of the three questions in the section, B15 scored highest, at 2.54 (reasonable performance) and asks the extent to which there is 'sustainable landscaping' on campus. The lowest scoring question, B14 (To what extent is maintenance, renovation and the operations in buildings carried out in an ecologically friendly manner?) received an overall score of 1.35, indicating poor performance on this indicator.

Table 12: Part B – University Management and Operations – Arithmetic means for ‘Buildings and Grounds’, by department

Department	n=	B13	B14	B15	Buildings & Grounds Mean
X	1	2	1	3	2
Agriculture Unit	1	1	1	3	1.67
Bursary	3	3	1	2	2
Campus Projects Office	1	2	3	3	2.67
Campus Records Management	1	3	x	4	3.5
Chancellor Hall	1	2	2	2	2
Commuting Students Office	1	2	1	3	2
Health Centre	1	0	0	1	0.33
HR Division	2	2.5	2	3	2.5
ICENS	1	4	3	3	3.33
Legal Unit	1	X	1	1	1
Library (Main)	1	1	0	1	0.67
Maintenance (buildings)	1	1	1	2	1.33
Maintenance (sanitation)	1	3	1	3	2.33
MITS	2	2	1	1	1.33
Mona Visitors Lodge	1	1	2	2	1.67
Natural Products Institute	1	2	2	3	2.33
Office of Graduate Studies	1	2	2	3	2.33
Office of Student Services	1	3	3	4	3.33
Phillip Sherlock Centre	1	1	0	4	1.67
Placement and Career Services	1	2	1	2	1.67
PR Office	1	2	x	4	3
Purchases (Bursary)	1	3	1	2	2
Systems (Library)	1	3	x	3	3
Total Sample/Mean	28	2.15	1.35	2.54	2.01

Waste Management

The overall mean for the Waste Management section was 1.66 (poor performance). The highest overall score for the section (3 – good performance) was recorded by the respondent from the Office of Graduate Studies, while those from the Main Library, Maintenance (buildings) and MITS, received the lowest score at 0.5 (lack of evidence/poor performance on this indicator).

Table 13: Part B – University Management and Operations – Arithmetic means for ‘Waste Management’, by department

Department	n=	W1 6	W1 7	W1 8	W1 9	W2 0	Waste Managemen t Mean
X	1	2	2	3	3	1	2.2
Agriculture Unit	1	2	1	2	2	0	1.4
Bursary	3	1	1.67	1.5	2.5	X	1.67
Campus Projects Office	1	2	2	2	2	1	1.8
Campus Records Management	1	1	2	3	X	x	2
Chancellor Hall	1	2	x	0	X	x	1
Commuting Students Office	1	1	3	3	2	x	2.25
Health Centre	1	1	1	X	X	0	0.67
HR Division	2	1	2.5	3	3	1	2.1
ICENS	1	3	0	0	4	0	1.4
Legal Unit	1	1	x	1	X	x	1
Library (Main)	1	1	0	X	X	x	0.5
Maintenance (buildings)	1	0	0	2	0	x	0.5
Maintenance (sanitation)	1	1	1	2	1	0	1
MITS	2	0.5	1	x	X	0	0.5
Mona Visitors Lodge	1	1	2	2	X	2	1.75
Natural Products Institute	1	3	3	3	3	2	2.8
Office of Graduate Studies	1	2	2	4	4	3	3
Office of Student Services	1	3	2	4	2	x	2.75
Phillip Sherlock Centre	1	0	0	3	X	0	0.75
Placement and Career Services	1	2	2	3	X	x	2.33
PR Office	1	1	2	2	2	x	1.75
Purchases (Bursary)	1	1	1	1	2	x	1.25
Systems (Library)	1	1	2	X	X	x	1.5
Total Sample/Mean	28	1.33	1.56	2.19	2.38	0.83	1.66

Of the five questions asked in the section, W20 (To what extent are audits carried out in regard to solid waste production and treatment?) scored the lowest, at 0.83 (lack of evidence on this indicator). The highest score went to W19 - To what extent is there hazardous waste management? This question scored 2.38 overall (reasonable performance).

Energy Management

Table 14: Part B – University Management and Operations – Arithmetic means for ‘Energy Management’, by department

Department	n=	EM21	EM22	EM23	Energy Management Mean
X	1	1	2	3	2
Agriculture Unit	1	0	1	1	0.67
Bursary	3	1.5	2	2.67	2.06
Campus Projects Office	1	1	2	2	1.67
Campus Records Management	1	X	1	2	1.5
Chancellor Hall	1	1	2	1	1.33
Commuting Students Office	1	3	3	x	3
Health Centre	1	0	0	0	0
HR Division	2	2	3	3	2.67
ICENS	1	0	3	3	2
Legal Unit	1	1	1	x	1
Library (Main)	1	1	1	2	1.33
Maintenance (buildings)	1	1	2	x	1.5
Maintenance (sanitation)	1	3	X	x	3
MITS	2	0.5	1.5	0	0.67
Mona Visitors Lodge	1	1	1	1	1
Natural Products Institute	1	2	2	2	2
Office of Graduate Studies	1	1	3	4	2.67
Office of Student Services	1	X	4	3	3.5
Phillip Sherlock Centre	1	3	2	0	1.67
Placement and Career Services	1	X	3	x	3
PR Office	1	1	1	1	1
Purchases (Bursary)	1	1	3	x	2
Systems (Library)	1	X	3	x	3
Total Sample/Mean	28	1.23	2.04	1.89	1.72

Overall, this section on energy management was scored at poor-to-reasonable performance level, with a mean of 1.72 across all departments. This is despite the fact that five of the 24 departments gave it a score of 3 (for good performance) or higher. Those were: the Office of Student Services, Commuting Students Office, Maintenance (Sanitation), Placement and Career Services, and Systems (Library). The Health Centre, MITS and the Agriculture unit, at 0.67 each, also indicated lack of evidence on this question.

Taking each question into account, the only one to attain the level of reasonable performance, at 2.04, was EM22: To what extent are energy conservation practices applied? This was slightly higher than the 1.89 (poor-reasonable performance) scored overall by EM23, which asked to what extent audits are performed in regard to energy usage and management. Lowest scoring overall (at 1.23 – poor performance) was EM21 – To what extent are ‘renewables’ or alternatives used as energy sources?

Water Management

Overall, Water Management was a very low scoring section, only attaining a mean score of 1.39 (poor performance) overall. Respondents from the Offices of Graduate Studies and of Student Services were the only ones to score the section at the level of good performance (3.5 and 3 respectively), while those from the Health Centre and the Phillip Sherlock Centre both signified lack of evidence for the indicators assessed by these three questions.

Of the three questions, the one with the highest mean score across all departments was WM25 – To what extent are facilities built for storm water management? Still, the score was only 1.83, on the higher end of the poor performance scale. The lowest scoring question, at 0.79, was WM26: To what extent are audits performed re: water consumption or water conservation?

Table 15: Part B – University Management and Operations – Arithmetic means for ‘Water Management’, by department

Department	n=	WM24	WM25	WM26	Water Management Mean
X	1	2	3	1	2
Agriculture Unit	1	2	1	1	1.33
Bursary	3	1	1	1	1
Campus Projects Office	1	2	1	1	1.33
Campus Records Management	1	X	2	X	2
Chancellor Hall	1	2	4	0	2
Commuting Students Office	1	2	2	X	2
Health Centre	1	0	0	0	0
HR Division	2	3	3	2	2.67
ICENS	1	1	0	0	0.33
Legal Unit	1	1	X	X	1
Library (Main)	1	0	1	0	0.33
Maintenance (buildings)	1	2	3	2	2.33
Maintenance (sanitation)	1	1	2	2	1.67
MITS	2	0	2	0	0.67
Mona Visitors Lodge	1	2	0	0	0.67
Natural Products Institute	1	2	3	2	2.33
Office of Graduate Studies	1	3	4	X	3.5
Office of Student Services	1	3	4	2	3
Phillip Sherlock Centre	1	0	0	0	0
Placement and Career Services	1	3	0	0	1
PR Office	1	1	2	X	1.5
Purchases (Bursary)	1	1	X	X	1
Systems (Library)	1	3	2	X	2.5
Total Sample/Mean	28	1.56	1.83	0.79	1.39

These results should be considered in light of the severe water shortage experienced on campus and in the greater Kingston and St Andrew area earlier this year (2010), which led to the decommissioning of all bathrooms and other water sources on campus, sometimes for days on end.

Financial

Table 16: Part B – University Management and Operations – Arithmetic means for the ‘Financial’ section, by department

Department	n=	F27	F28	F29	Financial Mean
X	1	2	3	1	2
Agriculture Unit	1	0	X	X	0
Bursary	3	1.5	2	1	1.5
Campus Projects Office	1	1	1	X	1
Campus Records Management	1	X	X	0	0
Chancellor Hall	1	X	X	1	1
Commuting Students Office	1	X	X	1	1
Health Centre	1	X	X	X	X
HR Division	2	x	X	2	2
ICENS	1	X	x	4	4
Legal Unit	1	X	X	1	1
Library (Main)	1	X	X	0	0
Maintenance (buildings)	1	2	X	X	2
Maintenance (sanitation)	1	X	1	3	2
MITS	2	x	0	0	0
Mona Visitors Lodge	1	X	0	3	1.5
Natural Products Institute	1	3	2	X	2.5
Office of Graduate Studies	1	4	3	2	3
Office of Student Services	1	X	2	3	2.5
Phillip Sherlock Centre	1	X	X	0	0
Placement and Career Services	1	0	0	X	0
PR Office	1	3	2	1	2
Purchases (Bursary)	1	X	X	X	X
Systems (Library)	1	X	0	3	1.5
Total Sample/Mean	28	1.8	1.23	1.4	1.48

The questions asked in this section are as follows: F27 – What is the percentage of investment in sustainability research? F28 – Is there a team/committee in operation to establish and monitor socially responsible investments? and F29 – To what extent is there disclosure of investment practices? All three were scored at ‘poor performance,’ though F27 scored marginally better than the other two questions, at 1.8.

Overall, this was one of the lower scoring sections, largely due to the fact that the respondents indicated they did not know many of the answers to the questions asked here. Ironically, (given that this is the 'Financials' section) the respondent from Purchases at the Bursary was one of those (in addition to the person from the Health Centre) who answered 'I don't know' to all three questions. The highest average, a 4, for excellent performance, goes to ICENS, but this is because they only answered one of the three questions. The respondents from the Office of Graduate studies and the PR Office, as well as respondent X, were able to respond to the three questions because they are in positions within the administration of the university that allow them to have knowledge of the university's finances.

Public Engagement

Overall, this section achieved the rating of reasonable performance (2.06). There were only two questions in the section: To what extent are community partnerships built re: sustainability issues/topics; and to what extent does the university play an active role in the community in regard to sustainability issues/topics. The former scored 1.84 (poor performance), while the latter scored 2.28 (reasonable performance). At the two extremes, the Commuting Students Office scored it a 4, for excellent performance, while the respondent from the Agriculture Unit gave it a 0.5, demonstrating lack of evidence on the indicators surveyed. (See Table 18 on the following page).

Table 17: Part B – University Management and Operations – Arithmetic means for ‘Public Engagement’, by department

Department	n=	PR30	PR31	Public Engagement Mean
X	1	2	3	2.5
Agriculture Unit	1	0	1	0.5
Bursary	3	2.5	2	2.25
Campus Projects Office	1	2	2	2
Campus Records Management	1	1	4	2.5
Chancellor Hall	1	2	3	2.5
Commuting Students Office	1	4	4	4
Health Centre	1	1	1	1
HR Division	2	1	2	1.5
ICENS	1	4	3	3.5
Legal Unit	1	1	1	1
Library (Main)	1	X	1	1
Maintenance (buildings)	1	3	3	3
Maintenance (sanitation)	1	1	2	1.5
MITS	2	0	2	1
Mona Visitors Lodge	1	1	X	1
Natural Products Institute	1	3	3	3
Office of Graduate Studies	1	2	3	2.5
Office of Student Services	1	3	3	3
Phillip Sherlock Centre	1	1	1	1
Placement and Career Services	1	3	2	2.5
PR Office	1	2	3	2.5
Purchases (Bursary)	1	1	1	1
Systems (Library)	1	3	3	3
Total Sample/Mean	28	1.84	2.28	2.06

Diversity

Table 18: Part B – University Management and Operations – Arithmetic means for ‘Diversity’, by department

Department	n=	D32	D33	D34	Diversity Mean
X	1	2	3	2	2.33
Agriculture Unit	1	4	2	1	2.33
Bursary	3	3.5	2.67	3	3.06
Campus Projects Office	1	2	X	2	2
Campus Records Management	1	3	4	4	3.67
Chancellor Hall	1	3	3	3	3
Commuting Students Office	1	3	3	4	3.33
Health Centre	1	0	1	2	1
HR Division	2	2	2	3.5	2.5
ICENS	1	4	3	3	3.33
Legal Unit	1	3	3	2	2.67
Library (Main)	1	0	2	2	1.33
Maintenance (buildings)	1	0	2	2	1.33
Maintenance (sanitation)	1	4	X	2	3
MITS	2	0	3	2	1.67
Mona Visitors Lodge	1	2	X	0	1
Natural Products Institute	1	3	3	x	3
Office of Graduate Studies	1	4	3	3	3.33
Office of Student Services	1	3	4	3	3.33
Phillip Sherlock Centre	1	X	1	2	1.5
Placement and Career Services	1	1	3	1	1.67
PR Office	1	3	2	3	2.67
Purchases (Bursary)	1	4	3	3	3.33
Systems (Library)	1	4	4	4	4
Total Sample/Mean	28	2.54	2.7	2.52	2.59

Diversity was the highest scoring section. The overall mean was 2.59, which suggests reasonable – good performance. Thirteen of the 28 respondents’ scores averaged 3 (good performance) or higher. The highest score was a 4 (excellent performance) from the Library (Systems division), while the lowest came from the respondents at the Mona Visitors Lodge and the Health Centre – each scoring this section at 1 (poor performance) overall.

Of the three questions asked, D33, about the extent to which there are programmes for under-represented groups like challenged individuals or foreign students, scored highest, at 2.7 (reasonable performance). However, the other two questions – D32 (measuring the extent to which gender equity is recognized in policy and operations) and D34 (measuring the extent to which alleviating measures like scholarships are in place to assist low-income students) – scored pretty close to this, at 2.54 and 2.52 respectively.

Summary of respondents' comments

The following section summarizes the comments of respondents and it is intended to accompany the preceding quantitative analysis on University management and operations.

Planning and Co-ordination

There is general lack of information or awareness of the university's plans. Those who are aware indicate that the university's strategic plan addresses sustainability more effectively than its operational plan. Implementation of sustainability related initiatives and plans is viewed as a challenge, largely due to budgetary constraints, but also because of a perceived lack of will. Green procurement is practiced to a degree, for example with energy-efficient air conditioning units and light-bulbs. However the desire to practice green procurement is superseded by budgetary constraints, or in the case of computers, the needs of the particular department. Not much attention is paid to the chemicals in the cleaning products used. There are staff and student buses available, but no significant carpooling initiatives, so most people with cars drive those onto campus individually.

Human resources

There is no staff orientation programme specifically focused on sustainability. However, within certain sections of the university (e.g. Placement and Career Services, and Maintenance), meetings and discussions are regularly held on sustainability related issues such as energy usage. There are no formal evaluations of employees' job satisfaction; however, informal discussions of this kind may occur within individual units. In terms of staff development, staff who enrol as students at the University are not required to pay tuition, and are compensated for furthering themselves academically. Continuing education programmes are available to interested staff, and the university generally shows low staff turnover.

Buildings and Grounds

In general, the perception is that while older buildings were not specifically eco-friendly in design, newer buildings are being constructed with sustainability in mind. However, air conditioning is seen as an essential feature due to the climate, and this lowers the perception of overall sustainability.

There is consciousness of the need for eco-friendly irrigation (e.g. waste water) and, to large extent, native plants are used on campus.

Waste Management

E-communication is widely encouraged, although the campus culture is such that formal documents are still sent in hard copy. There is no waste-free meal programme, most food bought on campus is packaged in Styrofoam. There is a plastic recycling programme on campus, though it is not clear how much of an impact this is having, or how widely used it is. A treatment plant exists for the treatment of liquid waste, and one respondent indicated that it has recently been upgraded. There is a hazardous waste management programme in existence, and there are fume hoods installed across relevant campus departments. Emissions from the University Hospital were seen as a concern by one respondent. Solid waste production audits have not been done.

Energy Management

Some halls of residence use solar panels for water heating purposes. For cost-saving purposes, sensors have been fitted in many buildings, which allow lights to switch off automatically. More efficient air conditioning units have also been purchased. It is customary to switch off appliances when not in use, however broader awareness of the need for- and methods of- energy saving measures is required. Energy use audits are done by a central energy conservation unit, and often informally in some departments.

Water management

Due to the water shortage of 2010, there is awareness of the need to conserve water. Some newer buildings have been fitted with water-efficient toilets, but the implementation of water saving taps and the harvesting of rain water is still not being implemented. The extent to which water-saving measures are put in place varies by department, although water consumption audits are conducted once per month (despite the fact that some internal metres may be faulty). Responses indicate that a new storm water facility is being built.

Financial

Investment in sustainability related research varies greatly according to department. According to a respondent from the Bursary, there is a team in place to monitor socially responsible investments. There is little to no disclosure of the university's investment practices, except at the most senior level.

Public Engagement

Persons employed at the university are involved in community service projects, but this is mainly done on an individual basis and is not necessarily directly related to sustainability. There are increased efforts to link with external communities, for example through the August Town township project that was recently initiated.

Diversity

Although gender equity on campus can be said to be improving, one respondent indicated that within his/her department (Maintenance) there is still the perception that females should be secretaries.

Facilities and infrastructure exist for students with physical disabilities, and these are being improved. There is an active office dedicated to the needs of international students.

Scholarships exist for low income students, but they are under-utilized in that very few students apply for them, so some of the money that is allocated toward this purpose is not used by the end of each fiscal year. This despite the perception that many if not most students could do with a greater level of financial assistance. Mention was made of the need to subsidize maintenance costs for students, and provide more assistance to first year students with financial need.

Summary/Conclusion

Only in the areas of Diversity, Public Engagement, and Buildings and Grounds was performance rated as reasonable overall. In all the other sections, responses indicated poor performance on the part of the University. This shows that there is significant room for improvement, particularly in the areas of Human Resources and Water Management, as well as the need to increase awareness among university staff of the financial practices and principles employed by the institution. In energy conservation, where the authors know that much work has been done on energy audits, conservation and efficiency, staff in the departments seem unaware of and uninvolved in the university's efforts. This, again, highlights the need for heightened awareness among university staff of what the university is doing, and in participating in the planning and implementation of operations in sustainability.

With that said, the sample was very small, at 28, and it would be unjustifiable to generalize our conclusions without drawing from a larger sample. However, it should be noted that many respondents were senior level staff in the departments. Hopefully, the data will provide a starting point for continuous evaluation of the progress UWI, Mona, makes on sustainability in management and operations.

Part C – Students

Sampling method

Each of the three researchers approached groups of students at central locations on campus, and asked them to complete and return the survey while the researcher waited. Note that this was done during examination time, so student presence on campus was lower than usual, and those who were present were often pre-occupied with exams. Thus, at times, researchers resorted to reading the questions to the students, who would then respond verbally while the researcher recorded the results.

We have reason to believe that some of the data was completed in a rush by the students, who were overwhelmed with examination pressure, and didn't necessarily apply their full focus to each question. Few of them made any additional comments on the audit tool items.

Sample

Two hundred and fifty one students from the five faculties of the university made up the convenience sample. Broken down by faculty, the sample is illustrated in Figure 7.

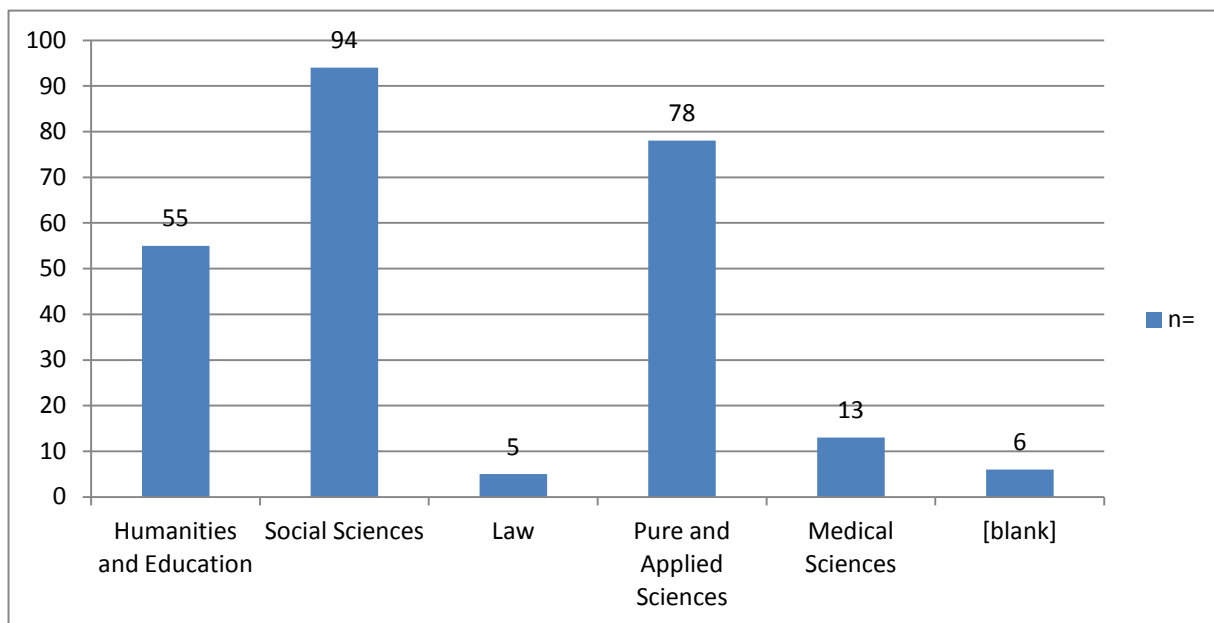


Figure 7: Number of students sampled, per faculty

Instrument

The student questionnaire was sub-divided into three sections: Student Life (4 questions), Student Organization and Governance (4 questions), and Student Learning Outcomes (5 questions). See Appendix D.

ASSESSMENT INDICATOR RATING SCALE	
Score	
X	Don't know/no information concerning this
0	None/there is total lack of evidence on this indicator
1	A little/evidence shows poor performance
2	Adequate/evidence shows reasonable performance
3	Substantial/evidence shows good performance
4	A great deal/excellent performance

Results and discussion

Table 20 lists the mean scores for each section of the audit tool C, according to Faculty.

Table 19: Part C – Students – Mean scores per section, by Faculty

Faculty	n=	Student Life	Student Organization	Student Learning	Overall
No affiliation stated	6	2.17	2.01	1.73	1.95
Humanities and Education	55	1.82	1.83	1.76	1.8
Law	5	2.13	1.54	1.93	1.87
Medical Science	13	1.57	1.79	2.03	1.81
Pure and Applied Science	78	1.8	2.14	1.83	1.92
Social Sciences	94	1.78	2.04	1.82	1.87
Total Sample/Mean	251	1.8	2	1.82	1.87

Overall, the Student Life section scored the lowest, at 1.8 (poor performance). This section received the lowest score from respondents from the Faculty of Medical Sciences, who scored it at 1.57 (poor performance), while those from the Faculty of Law and the persons who left their faculty affiliation blank scored it the highest, at 2.13 and 2.17 respectively, both indicating reasonable performance.

Student Organization and Governance was the highest scoring section, at an overall mean of 2 (reasonable performance). Students from the faculty of Pure and Applied Sciences rated this section highest, at 2.14 (reasonable performance), while those from the faculty of Medical Sciences rated it lowest, at 1.79 (poor performance).

The Student Learning Outcomes section was rated highest by students from Medical Sciences, at a mean of 2.03. Overall the section scored 1.82 (poor performance) across all faculties, with the lowest ratings, of 1.76 and 1.73 respectively (both indicating poor performance), from students in the faculty of Humanities and Education, and those who left their faculty affiliations blank.

Overall, these same students (blank affiliation) recorded the highest mean across all three sections, at 1.95. This was closely followed by those from the faculty of Pure and Applied Sciences, with an overall mean of 1.92. The lowest overall mean was 1.8, from the faculty of Humanities and Education. All of these scores indicate the perception of poor performance.

We will now discuss each section in turn.

Student Life

Table 20: Part C – Students – Arithmetic means for ‘Student Life’, by faculty

Faculty	n=	SL1	SL2	SL3	SL4	Student Life
No affiliation stated	6	2.5	2.5	2	1.67	2.17
Humanities and Education	55	1.91	1.85	1.83	1.68	1.82
Law	5	2.5	2	2	2	2.13
Medical Science	13	1	1.29	2.5	1.5	1.57
Pure and Applied Science	78	1.92	1.8	1.8	1.68	1.8
Social Sciences	94	1.57	2	1.78	1.77	1.78
Total Sample/Mean	251	1.77	1.87	1.85	1.71	1.8

Overall, this was the lowest scoring section, at 1.8 overall. No question scored higher than 1.87, (poor performance), indicating that there is room for improvement along all the indicators measured by these four questions.

Of the questions in the section, the lowest scoring overall was SL4 – “To what extent is career counseling (on work opportunities related to sustainability) available?” scored 1.71 overall (signifying poor performance). The highest scoring was SL2 (at a score of 1.87) – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

This was despite the fact that SL2 and SL3 (To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?) had the highest number of ‘I don’t know’ answers (103 and 108 students respectively) of all the questions asked. One reason for the high number of ‘I don’t knows’ is that many of the students indicated through their comments that they don’t live on hall.

Student Organization and Governance

Table 21: Part C – Students –Arithmetic means for ‘Student Organization and Governance’, by faculty

Faculty	n=	SG5	SG6	SG7	SG8	Student Organization and Governance
No affiliation stated	6	1.8	2	2.25	2	2.01
Humanities and Education	55	2.04	1.63	1.74	1.91	1.83
Law	5	1.8	1.6	0.75	2	1.54
Medical Science	13	1.27	2.08	1.38	2.42	1.79
Pure and Applied Science	78	2.05	1.96	2.09	2.46	2.14
Social Sciences	94	1.96	1.87	1.83	2.49	2.04
Total sample/Mean	251	1.96	1.85	1.86	2.33	2

Overall, the highest scoring question in this section was SG8 – To what extent is there voluntary community service by students – which scored 2.33 (reasonable performance) across all faculties. Students from the faculties of Social Sciences (2.49), Pure and Applied Sciences (2.46) and Medical Sciences (2.42) scored this question highest.

The lowest scoring questions were SG7, which scored 1.86, and asks whether there are any student groups with a sustainability/environmental focus; and SG6 (To what extent are students willing to take responsibility in sustainability activities?), which scored 1.85 overall. Both of these indicate perceptions of poor performance on the indicators.

Student Learning Outcomes

Table 22: Part C – Students – Arithmetic means for ‘Student Learning Outcomes’, by faculty

Faculty	n=	SO9	SO10	SO11	SO12	SO13	Student Learning Outcomes
No affiliation stated	6	1.8	1.6	2.5	1.5	1.25	1.73
Humanities and Education	55	1.91	1.98	1.65	1.73	1.55	1.76
Law	5	2.67	1.67	3	1.33	1	1.93
Medical Sciences	13	2.55	2.1	1.77	1.92	1.82	2.03
Pure and Applied Sciences	78	1.89	2.02	1.7	1.84	1.71	1.83
Social Sciences	94	2.09	1.68	1.6	1.85	1.85	1.82
Total Sample/Mean	251	2.02	1.87	1.69	1.81	1.72	1.82

Overall, this section was scored at 1.82 (poor – fairly reasonable performance). The highest scoring question was SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics? (2.02 - reasonable performance).

None of the other questions scored above 2. The lowest scoring question was SO11 - To what extent have students been able to explore the connections between their chosen study area and sustainability? which scored 1.69 (poor performance). This question was rated particularly low by the faculties of Humanities and Education (1.65 – poor performance) and Social Sciences (1.6).

Summary of Respondents' Comments

Introduction

What follows is a discussion of the general trends displayed in the comments provided by students to Part C of the MESCA Audit tool. This is intended to accompany the quantitative analysis in the previous section.

We have discussed each question in turn.

SL1 – To what extent are orientation programmes on sustainability available?

Many respondents didn't know whether such programmes exist on campus at all. Some indicated that they saw evidence of this in Government courses, and in the initiatives by [national] government and other organizations. Overall, the comments indicate that the programmes that currently exist are few and not sufficient to have a genuine impact on UWI students, or are not known to the students in the sample.

SL2 – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

To the extent that these exist, they are not officially implemented, they come about as a by-product of independent living (e.g. time management, responsible decision making), or they are practiced as unwritten rules and ethics.

SL3 – To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?

Most of the respondents who wrote comments to this question indicated that they don't live on hall so they wouldn't know. The only mention of such initiatives implemented without the influence of academic staff is seen through the work of the Guild of Students and service clubs.

SL4 – To what extent is career counseling (on work opportunities related to sustainability) available?

Responses indicate that career counselling is available to each UWI student, and it is helpful in guiding students toward career choices. It could be improved by providing information about pay scales for various positions in relevant industries, and to careers with a focus on environment and sustainability.

SG5 – To what extent are student groups collaborating with administration in the areas of sustainability?

Most who commented indicated that they don't know the answer to this question. Among those who did know, they say that this type of collaboration takes place through the Guild of Students activities. Student activism is also reported to be high around the issue of making sure that tertiary education is affordable.

SG6 – To what extent are students willing to take responsibility in sustainability activities?

Responses indicate that performance in this area is low. Students are more concerned with their individual well-being than that of the country as a whole, and are ignorant as to the impact of sustainability on their own lives.

SG7 – Are there any student groups with a sustainability/environmental focus?

Most students did not know which, if any, groups existed. Those who did know mentioned Circle K, the External Affairs Committee (EAC) initiatives and the United Nations.

SG8 – To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g. sustainable livelihoods training, health, human rights, religion, culture)

There is voluntary community service by students, which takes place through many different campus clubs. Some respondents answered in relation to groups outside the campus such as those associated with HEART programs, and initiatives by churches, and service clubs.

SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics?

Responses indicate that through high school education and their own following of the news and current affairs, students can contribute in this area, particularly since the culture allows for freedom of speech and effective communication through proper channels.

SO10 – To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?

Responses to this question are mixed. Of those who commented, those from the Social Sciences indicate that this is part of their coursework, though it is accepted in varying degrees by students. Those who commented from the faculty of Pure and Applied Sciences said they didn't know how to answer this question, and that this implies that there isn't enough work done on this indicator.

SO11 – To what extent have students been able to explore the connections between their chosen study area and sustainability?

This is done in very limited ways and mainly in the areas where such connections are automatic or natural – e.g. medicine and business – or where the individual student takes an active interest in these connections. It is not a generally instituted practice.

SO12 – To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?

This seems to depend on the Faculty with which students are affiliated. The only two Faculties represented in the comments were Pure and Applied Sciences, and Social Sciences. Those from Pure

and Applied Sciences indicated that while the training may be there, “the challenge is in developing the capacity to *implement* sustainable solutions in a real-world setting”. Within the Social Sciences, responses were very varied – some positive, some indicating that this area is really lacking, and some indicating that tertiary education by its very nature helps to develop these skills.

SO13 – To what extent are students able to contribute practical solutions to real world sustainability challenges?

Performance (especially implementation/evidence of real impact) in this area is indicated to be low, due to limited guidance or opportunity given to students by the institution and/or the government to contribute to solutions to sustainability challenges.

Summary /Conclusion

With an overall score of 1.87, it is clear that students do not perceive that the UWI is performing adequately in environment and sustainability in relation to them. Much needs to be done by the students themselves and by the university to facilitate students in leading sustainable lifestyles, especially in Halls of residence; and in ensuring that their learning outcomes and career counselling include connections to environment and sustainability. Of importance also, would be education that improves students’ ethical perspectives in relation to environment and sustainability. It is noteworthy that students, especially those in Pure and Applied Sciences, and Social Sciences perceived their organization and governance to be adequate, with voluntary community service receiving the highest score. These data encourage optimism for the development of sustainability initiatives through campus student organizations.

Overall Summary of Findings

The audit exercise produced a “snapshot” view of the perceptions of respondents in regard to environment and sustainability (E & S) practices in a) Teaching, Research and Community Service; b) university management and operations; and c) among students.

Part A revealed that teaching approaches that contribute to good human relationships and which prepare students for life in a multicultural society, as well as staff’s expertise and willingness to teach and research in E & S were rated highly by academics. The respondents from the Institute for Sustainable Development understandably rated all aspects of this section of the tool highly, with the caution that staff development opportunities, rewards, and teaching resources were needed for all faculty to teach and research in E & S. Aspects that need improvement include the development of Interdisciplinary programmes and work study and internships whereby students can gain knowledge, skills, and attitudes for solving sustainability challenges in the “real world”.

In regard to part B of the audit, building and grounds, public engagement and attention to issues of diversity were the highest rated indicators for adequate performance. Human Resources and Water Management were the lowest ranking indicators. Also, financial management in relation to investment in research and sustainability, and monitoring and disclosure of socially responsible investment practices received low scores perhaps because this information was not known generally by respondents. Responses to the management and operations part of the audit point to the need for open, participatory discourse on these operations of the university that would increase awareness and motivation to take part in sustainable practices. It is noteworthy that although waste management is perceived to be inadequate, the management of hazardous waste was scored as reasonable.

For part C of the audit, students’ responses indicate that much needs to be done among students in order to improve the poor performance scores in student life and student learning outcomes. Although voluntary service is deemed to be reasonable, and there are favourable perceptions in relation to student organizations in relation to environment and sustainability, this seems to have had little or no impact on student living practices.

Recommendations

1. A forum of key, interested representatives from among all staff and students should be held to discuss what is happening in E & S on the campus, to discuss the findings of this audit, and to chart the way forward for prioritizing and mainstreaming E & S on the UWI, Mona campus, in areas of policy, curriculum, teaching, research, and community links; and, in university management, operations, and student life.
2. An action plan should be developed as a result of the forum to operationalize plans for future work in E & S and for seeking funds for E & S initiatives.
3. Focal points made up of interested persons, with relevant expertise should be institutionalised to initiate, develop and implement plans for E & S.
4. The audit reveals that staff, especially those of the ISD, have the expertise and are willing and able to assist in developing E & S in cross-faculty and cross-sectoral initiatives on the campus, especially in curriculum and operations. Internal networks should therefore be activated to include staff with expertise in further developing interdisciplinary programme(s) in E & S, and in facilitating the integration of E & S in curriculum and research of existing and new programmes. Links with the community and collaboration with other universities in these initiatives should be sought.
5. Special priority should be given to facilitate the integration of E & S in student life and their ethical perspectives, existing student organizations, and student learning outcomes.

Appendix A: Graphs of the responses to Part A indicators for Teaching, Research and Community Service by Faculty/Unit

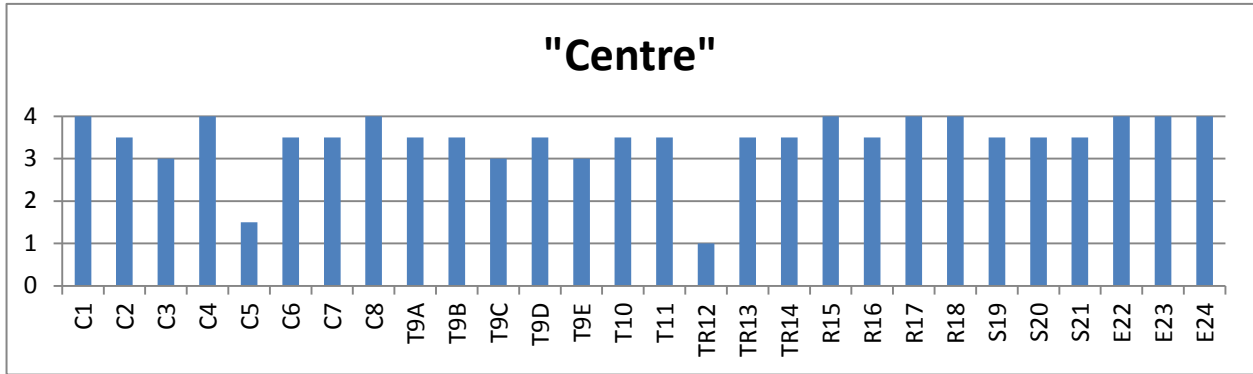


Figure A 1: Part A – Teaching, Research and Community Service – Institute for Sustainable Development ('Centre'), arithmetic means for all questions

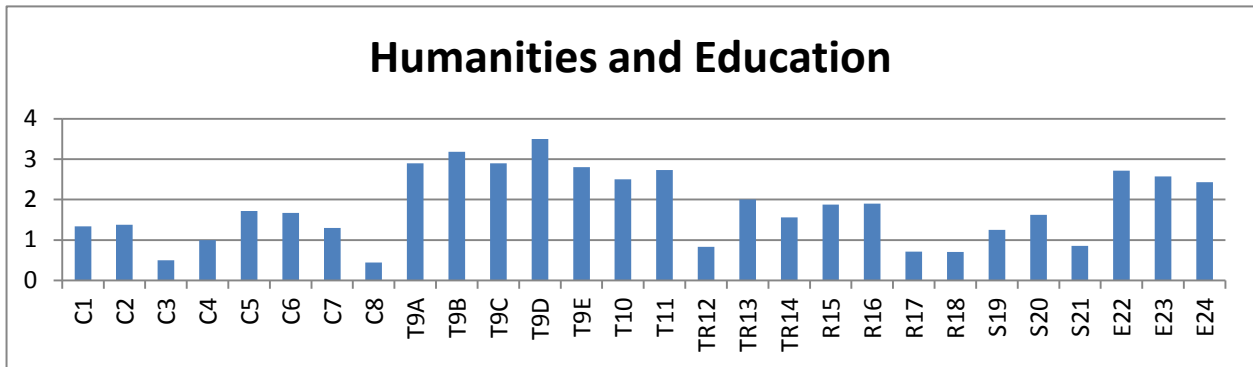


Figure A 2: Part A – Teaching, Research and Community Service – Faculty of Humanities and Education, arithmetic means for all questions

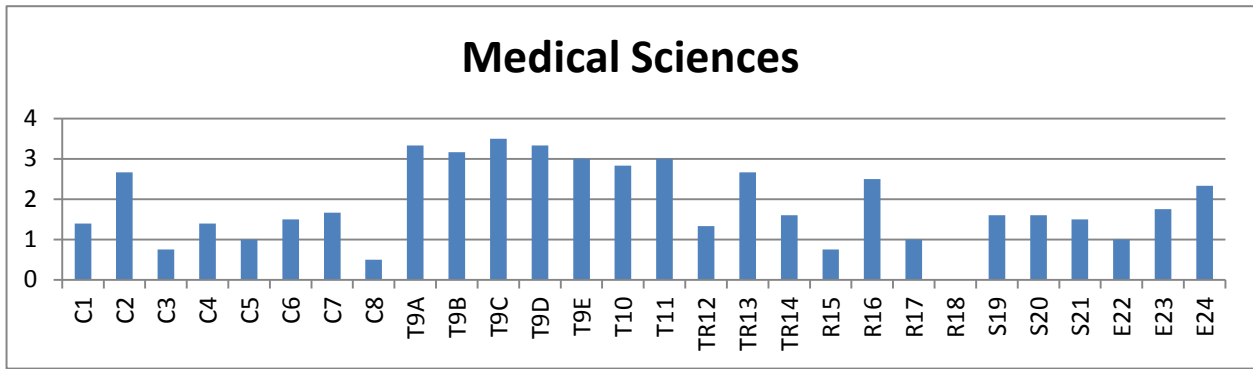


Figure A 3: Part A – Teaching, research and community service – arithmetic means for all questions, as reported by respondents from the Faculty of Medical Sciences

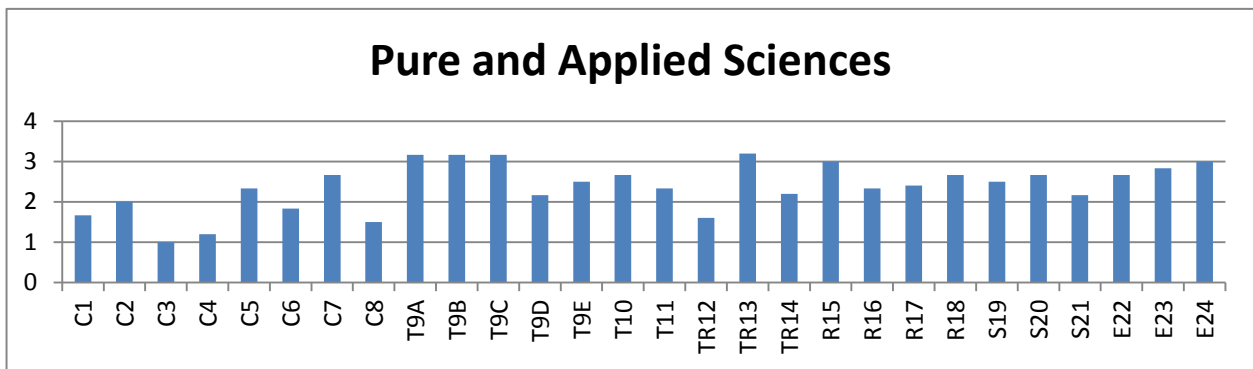


Figure A 4: Part A – Teaching, Research and Community Service – Faculty of Pure and Applied Sciences, arithmetic mean for all questions

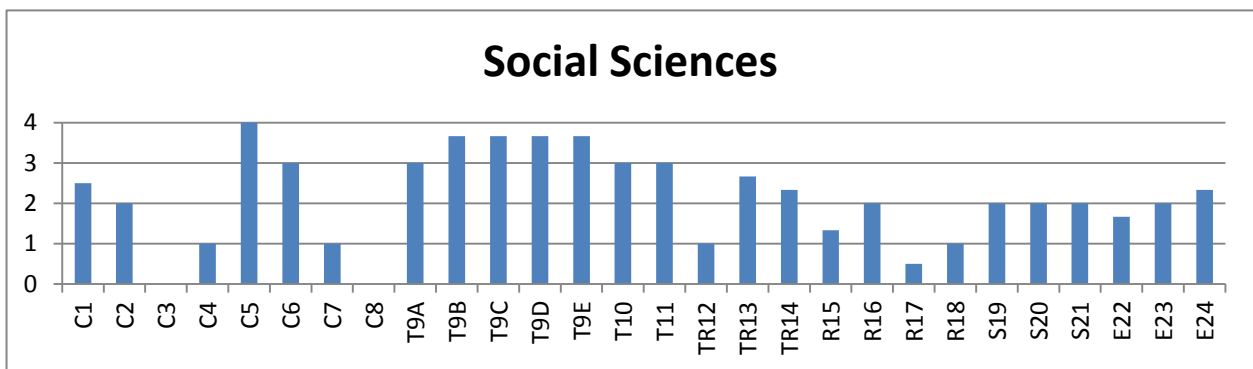


Figure A 5: Part A – Teaching, Research and Community Service – Faculty of Social Sciences, arithmetic means for all questions

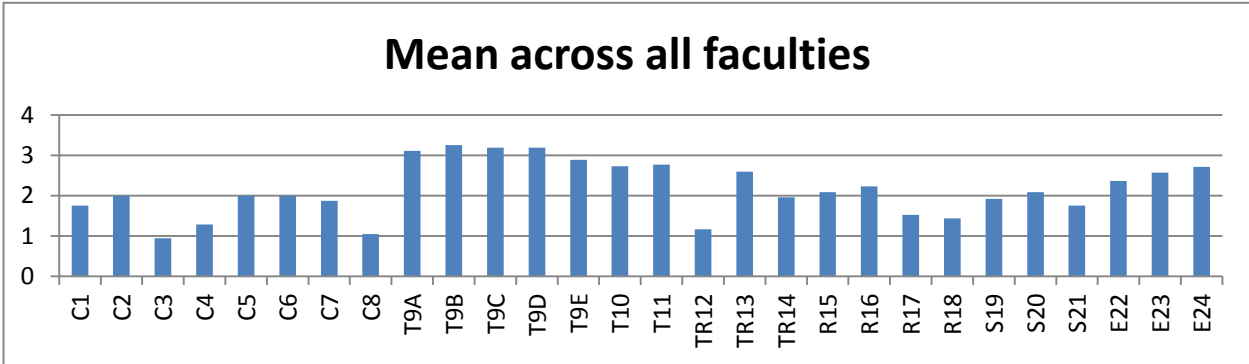


Figure A 6: Part A – Teaching, Research and Community Service – arithmetic means for all questions, aggregated across all faculties sampled

MESCA AUDIT TOOL FOR CARIBBEAN UNIVERSITIES

Issues of

SUSTAINABILITY

at the

UNIVERSITY OF BELIZE

July 2011

ABSTRACT

At just over ten years old, the University of Belize is a relatively new tertiary institution that is regarded as the country's national university. Offering over fifty degree programmes from its four faculties at some five locations across the country, UB caters to its nearly four thousand student population.

Issues of sustainability feature prominently at UB. As part of their general education core requirements, virtually all students are required to take an environmental course entitled 'Environment, Conservation and Development.' The institution offers a full Bachelors degree in Natural Resources Management, and for its very first ever graduate degree course, UB has partnered with several regional universities to offer a Masters degree in Biodiversity.

At the student level, students recently hosted a successful Earth Day. The UB Environmental Club, one of the many student clubs on campus, encourages energy conservation via posting flyers atop electrical switches and air conditioning units to remind people to switch them off when not in use.

But there are other areas where there is scope for substantial improvement in the area of sustainability. There is no energy management policy, neither is there a water nor solid waste management policy. The institution also needs to enhance its research efforts into issues of sustainability.

Undertaking these research efforts as well as continuing service in this area will further encourage students and the administration at large to mainstream sustainability into all its endeavours. This will go a long way towards meeting the University's Vision Statement of producing graduates who are, among other skills and values, ecologically responsible.

Mission Statement

The University of Belize is a national, autonomous, multilocation institution committed to excellence in higher education, research and service for national development. As a catalyst for change, it provides relevant, affordable and accessible educational and training programmes that address national needs based on principles of academic freedom, equity, transparency, merit and accountability.

Vision Statement

In the next five years, the University of Belize is dedicated to fostering Belize's development who are socially and ecologically responsible, analytical, self-confident, disciplined, ethical, entrepreneurial and skilled communicators; and who are committed to using these skills and values for Belize's enrichment.

Teaching, Research & Community Service

This questionnaire was administered at the Academic Council of the University of Belize. Headed by the University's Provost, the Academic Council is the highest academic decision making body of UB and is comprised of, among others, the Deans of the four faculties, the University Registrar, the Director of

Research and other non-academic directors including Human Resources, Information & Communications Technology, Physical Plant and the Chief Financial Officer.

Curriculum

At UB, courses whose focus is on environmental sustainability are only offered at one of the four faculties – the Faculty of Science and Technology (FST). An analysis of the results of the survey at the Academic Council confirmed this. When asked to what extent are courses offered that focused on sustainability, including its social, economic and environmental dimensions, only the Dean of FST was able to award the highest score of 4 and commented that his faculty offers the Natural Resources Management (NRM) programme, which is this University's flagship programme on sustainability. A similar score of 4 was awarded by FST when asked what is the level of integration of sustainability topics in courses; is there an interdisciplinary degree in sustainability studies; and to what extent are students required to take courses in sustainability topics. This latter question was awarded the highest scoring since for virtually all of UB programmes, students in all faculties must take at least one natural science elective course and this courses focuses on sustainability.

When asked how accessible are courses in sustainability studies to students, the score was 3. This indicates that while courses in sustainability are accessible to students, there may be instances when students opt not to take these courses since other natural science courses are available. This is reflected in the score of 2 as response to the question to what extent do students enroll in available courses that engage sustainability topics/issues.

Several UB Bachelors degree programme feature project work or internship. Asked to what extent sustainability areas are considered in selecting, executing and evaluating projects/internships, the score awarded was 3. The highest score of 4 was awarded for the final question in this section which focused on the extent to which work study/internship programmes on sustainability given for credit as part of student programmes.

Teaching Approach

The second segment of this questionnaire focused on teaching approaches. This segment sought to ascertain the extent to which intended learning outcomes or capacities were developed among the students. The highest score of 4 was awarded to the outcome of making informed decisions. Other outcomes including developing critical thinking skills, increasing sense of responsibility, and developing problem-solving skills especially at the local community level were accorded a score of 3. The lowest score of 2 was given to the learning outcome of encouraging respect for others' opinions.

Substantial evidence was provided that the teaching approach contributes to fostering self esteem in students and fostering good human relationships. This was accorded a score of 3 as was the question to what extent does the teaching approach help to prepare students for life in a multicultural society. Belize is indeed a multicultural and plural society and all its various cultures are represented at its national university.

Teaching Resources

There is substantial evidence that there are staff development opportunities and rewards for sustainability initiatives. This was graded as a 3 as was the extent to which there are communications facilities and collaboration opportunities with other universities and with local and global agencies present in Belize. Under this section a score of 3 indicating showing good performance was also provided to the question concerning the supply of teaching materials on sustainability.

Research & Scholarship

Since the University offers a full fledged Bachelors degree in Natural Resources Management, this indicates that some department faculty, staff and students are involved in research in areas of sustainability. This indicator was awarded a 3. A similar score was given to the subsequent indicator focusing on the extent to which the department collaborates with other institution/ stakeholders in pursuit of solutions to sustainability issues, and also the extent to which funding is accessed for studies/research in sustainability topics.

Service Activities

The University of Belize scores well when focusing on service activities in areas of sustainability. For the indicator addressing the extent to which local sustainability challenges form a part of service to the wider community, a score of 3 was given. A similar score was given to the indicator looking at the extent to which the department's staff and students are involved in service activities in the area of sustainability. Areas of sustainability do feature in the selection and execution of service projects in the community.

Staff Expertise & Willingness

The University scores its best when the focus is on staff expertise and willingness in the areas of sustainability. In the Natural Resources Management degree programme, at least two faculty members have terminal degrees in their area of expertise. These members, in addition to others, who may not yet possess terminal degrees are willing to carry out and indeed, are carrying out research and service activities on sustainability topics.

UNIVERSITY MANAGEMENT & OPERATIONS

The University's vision and mission statements do incorporate sustainability principles and as such this indicator received the highest score possible. However, a similar score was not received when asked to what extent do the policies of the University include attention to sustainability principles. The consensus score for this question was a 3. A similar score of 3 was accorded to the extent to which the objectives of the strategic and operational plans address the social, economic and environmental dimensions of sustainability. No information was forthcoming about formal strategies stated for reducing impacts of human activities and natural disasters.

Substantial evidence was provided indicating the extent of “green” procurement. This was accorded a 3, similar to the extent to which the campus fuel fleet is efficient and uses alternatives (e.g. car pooling) and regularly monitors wastes.

Human Resources

Focusing on the University human resources, including its hiring practices, low priority is accorded to orientation programmes on sustainability for new staff members. Low priority is similarly accorded to continuing education programmes for employees about sustainability issues/topics. A higher score was awarded when asked if there are staff compensation programmes that take into account staff satisfaction, staff development and future job sustainability. There also exists at the University, a system of staff/employee rewards for sustainability initiatives and service to the wider community.

Buildings & Grounds

The University of Belize is multilocational. However its central administration and the heart of its operations are at its main campus in Belmopan. The consensus response was that at this campus, which is also the location with the most recently constructed structures, the design and construction of the buildings are based on ecologically friendly principle, and make use of natural light, natural ventilation and disaster resistance technologies. A high grade was also given to the practice of ‘sustainable landscaping.’ This involves using native plants to populate the campus grounds. However, maintenance, renovation and the operations in the buildings are seemingly not carried out in an ecologically friendly manner as this indicator was graded as a 1.

Waste Management

In general the University of Belize scores poorly for this indicator. There is no evidence that solid waste reduction practices are carried out. Neither is there any evidence that there is waste recycling, reuse or treatment is carried out. And audits are not carried out in regard to solid waste production and treatment. However, notable efforts are being made to reduce liquid waste as well as hazardous waste management.

Energy Management

The University also scores poorly on indicators related to energy management. Renewables or alternatives are not used as energy sources and neither are audits performed in regard to energy usage and management. However minimal attempts are made to apply energy conservation practices. There is a UB Environmental Club which advocates the switching off of lights and air conditioning units when they are not being used. To get its message across, the club posts stickers in strategic locations in various offices.

Water Management

Compared to the other previous two indicators focusing on waste management and energy management, the University scores better on its water management practices. Though no audits are

performed regarding water consumption and water conservation, there is some evidence that the facilities are built for storm water management and there is also some evidence that basic water conservation practices are implemented though not on a consistent basis.

Financial

At the University of Belize, there is no team or committee in operation to monitor socially responsible investments. Neither is there disclosure of investment practices. No information is available on the percentage of investment in sustainability research, though this could soon change with the recent hiring of a Director of Research.

Public Engagement

The University does make an effort to engage the community in a broad range of areas and topics. In this regard though, sustainability issues/topics are not necessarily prioritized. Thus the University plays a marginal role in the community with regards to sustainability issues/topics.

Diversity

The University scores high marks for this indicator. Gender equity is recognized in policy and operations and the consensus score in this regard was the highest possible score of 4. A similarly high score was awarded for the institution's initiatives to assist low income students with scholarships and reduced costs. The University does offer a wide range of programmes tailored to national needs. However it is not in all its programmes that under-represented groups are present.

STUDENTS

All newly enrolled students at the University of Belize undergo an all day orientation programme. This orientation introduces the students to all aspects of the university. A typical orientation will likely mention issues of sustainability, though this may not likely be a focal point. At this present time, the university does not possess any halls of residence. Students from out districts find their own living arrangements, though the university does assist in this regard. Since there are no halls of residence, any questions on sustainability initiatives therein are moot. Career counseling is available at UB, though sustainability opportunities are not necessarily prioritized.

Student Organization & Governance

There is some evidence that student groups do collaborate with administration in the areas of sustainability. This is evidenced by the fact that the UB Environmental Club has spearheaded energy conservation initiatives as well as regularly collects paper for recycling. This indicates that students are, in fact, willing to take responsibility in sustainability activities. The consensus score was this indicator was a 4. A similarly high score was accorded to voluntary community service by students in areas of sustainability since students have in the past collaborated to collect garbage strewn on the shoulders of the country's main highways.

Student Learning Outcomes

There is a high probability that University of Belize students can understand and communicate effectively about sustainability issues, practices and topics. This is because of the general education core requirement that each student must take a natural science course as a part of any degree programme they are pursuing at the University. For most students, the most popular natural science course taken is entitled Environmental Conservation & Development.

According to the UB Catalogue, this course “provides a general introduction to ...the various relationships and impacts between the Earth and its inhabitants, and various perspectives and approaches to conservation and sustainable development with emphasis on Latin America, the Caribbean and Belize. Major biophysical and socioeconomic factors that affect tropical conservation and development efforts are reviewed. Students will be encouraged to become participants in environmental and conservation efforts. Topics (taught in this course) include sustainable future; ecosystems; human population; dimensions population and development; water pollution and its prevention; municipal solid waste; disposal and recovery; soil; food production and pests; wild species and biodiversity; energy; fossil fuels; renewable energy; climate and climate change; and ozone depletion.”

Given as reiterated earlier, this basic course is a must for virtually all of UB students, there are high scores for the indicators of sustainability under student learning outcomes. In general, successfully completing this course enables students to develop and use an ethical perspective of themselves as part of an interconnected world, explore the connections between their chosen study area and sustainability, develop basic technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges and contribute practical solutions to real world sustainability challenges. It is also to be noted that since the University of Belize offers a full Bachelors degree in Natural Resources Management, students pursuing this particular degree are far more likely to be fully immersed in the many sustainability challenges confronting Belize and the wider world at this time in history.

University of the West Indies Cave Hill
MESCA Audit Response
June 2011

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University of the West Indies Cave Hill MESCA Audit Tool

(Part A: Teaching, Research & Community Service Reponses)

The Sample Description

The data collection took place in April and May, 2011. Information that was needed from the Academic Staff to complete Part A was sent through emails to fifteen (15) Academic heads (Programme directors, Deans and Heads of Department) from all faculties on campus. Overall, there were two (2) completed Audit Tools rendered for this section; from Humanities and Education, and the Center for Resource Management and Environmental Studies (CERMES) respectively.

The Instrument

This part of the Audit Tool was divided into six sections: Curriculum (8 questions), Teaching Approach (3 questions – of which the first one was separated into 5 parts), Teaching Resources (3 questions), Research & Scholarship Activities (4 questions), Service Activities (3 questions), and Staff Expertise & Willingness (3 questions).

The following rating scale was used:

Assessment Indicator Rating Scale		
Score		
X	=	Don't know/no information concerning this
0	=	None/there is total lack of evidence on this indicator
1	=	A little/evidence shows poor performance
2	=	Adequate/evidence shows reasonable performance
3	=	Substantial/evidence shows good performance
4	=	A great deal/excellent performance

Curriculum

Table 23 – Arithmetic means for *Curriculum* questions, by faculty

Faculty	n=	C1	C2	C3	C4	C5	C6	C7	C8	Curriculum
Humanities and Education	1	2	2	2	X	X	X	X	0	0.75
CERMES	1	4	4	4	4	4	4	4	X	3.50
Total	2									

Overall, the lower score in this section was 0.75 (lack of evidence) while the higher score was 3.50 (good performance). The higher score was obtained from the respondent for CERMES.

Regarding the individual questions in this section, the lowest score was X (no information) while the highest recorded score was 4 (excellent performance). The respondent for CERMES gave a performance rating of 4 (excellent performance) for each question except C8 – To what extent are work study/internship programmes on sustainability issues/topics given for credit as part of student programmes? – for which a rating of X (no information) was given. The highest performance rating given by the respondent for Humanities and Education was 2 (reasonable performance) for questions C1 to C3 while a rating of X (no information) was given for questions C4 to C7, and a rating of 0 (lack of evidence) for question C8.

Teaching Approach

Table 24 – Arithmetic means for *Teaching Approach* questions, by faculty

Faculty	n=	T9A	T9B	T9C	T9D	T9E	T10	T11	Teaching Approach
Humanities and Education	1	3	3	3	3	3	3	3	3.00
CERMES	1	4	4	4	X	4	3	4	3.29
Total	2								

Overall, the lower score in this section was 3.00 (good performance), obtained from the respondent for Humanities and Education while the higher score was 3.29 (good performance), obtained from the respondent for CERMES.

With respect to the individual questions in this section, the lowest score was X (no information) while the highest recorded score was 4 (excellent performance). The only question to receive a performance rating lower than of 3 (good performance) was T9D – To what extent does the lecturer’s teaching approach contribute to encouraging respect for others’ opinions? – for which a rating of X (no information) was given by the respondent for CERMES.

Teaching Resources

Table 25 – Arithmetic means for *Teaching Resources* questions, by faculty

Faculty	n=	TR12	TR13	TR14	Teaching Resources
Humanities and Education	1	0	1	0	0.33
CERMES	1	4	4	4	4.00
Total	2				

Overall, the lower score in this section was 0.33 (lack of evidence), obtained from the respondent for Humanities and Education while the higher score was 4.00 (excellent performance), obtained from the respondent for CERMES.

With regard to the individual questions in this section, the lowest score was 0 (lack of evidence) while the highest score recorded was 4 (excellent performance). The respondent for Humanities and Education gave a performance rating of 0 (lack of evidence) for each question except TR13 – To what extent are communication facilities/collaboration opportunities with other universities/local and global agencies present? – for which a rating of 1 (poor performance) was given. However, the respondent from CERMES gave a performance rating of 4 (excellent performance) for all of the questions in this section.

Research and Scholarship Activities

Table 26 – Arithmetic means for questions in the *Research and Scholarship Activities* section, by faculty

Faculty	n=	R15	R16	R17	R18	Research & Scholarship Activities
Humanities and Education	1	0	0	0	0	0.00
CERMES	1	4	4	4	4	4.00
Total	2					

Overall, the lower score in this section was 0.00 (lack of evidence) while the higher score was 4.00 (excellent performance). The higher score was obtained from the respondent from CERMES.

With respect to the individual questions in this section, the respondent for Humanities and Education gave a performance rating of 0 (lack of evidence) for each question while the respondent from CERMES gave a performance rating of 4 (excellent performance) for each question.

Service Activities

Table 27 – Arithmetic means for *Service Activities* questions, by faculty

Faculty	n=	S19	S20	S21	Service Activities
Humanities and Education	1	1	1	1	1.00

CERMES	1	3	4	3	3.33
Total	2				

Overall, the lower score in this section was 1.00 (poor performance), obtained from the respondent for Humanities and Education while the higher score was 3.33(good performance), obtained from the respondent for CERMES.

Regarding the individual questions in this section, the lowest score was 1 (poor performance) while the highest score was 4 (excellent performance). The respondent from CERMES gave a performance rating of 3 (good performance) for each question except S20 – To what extent are the department’s staff and students involved in service activities in the area of sustainability? – for which a performance rating of 4 (excellent performance) was given. The respondent for Humanities and Education gave a performance rating of 1 (poor performance) for all of the questions in this section.

Staff Expertise and Willingness

Table 28 – Arithmetic means for questions in the *Staff Expertise and Willingness* section, by faculty

Faculty	n=	E22	E23	E24	Staff Expertise & Willingness
Humanities and Education	1	1	1	1	1.00
CERMES	1	4	4	4	4.00
Total	2				

Overall, the lower score in this section was 1.00 (poor performance) while the higher score was 4.00 (excellent performance). The higher score was obtained from the respondent for CERMES.

With respect to the individual questions in this section, the respondent for Humanities and Education gave a performance rating of 1 (lack of evidence) for each question. However, the respondent from CERMES gave a performance rating of 4 (excellent performance) for all of the questions in this section.

Review of Comments

The respondent for Humanities and Education made comments on questions *C1 – To what extent does the department/unit offer courses focused on sustainability including its social, economic, and environmental dimensions?* – in the Heritage Studies programme and Environmental Ethics such elements are available; *C3 - Is there an inter-disciplinary degree programme/course in sustainability studies?* – where the Heritage Studies programme was also mentioned, taking care to note that “it is not interdisciplinary as such”; *C4 - To what extent are students required to take courses in sustainability topics/issues?* – where Heritage Studies – where it is stated that Heritage Studies is “an MA programme whilst we have never offered Environmental ethics because of staffing constraints”; *C5 - How accessible are courses in*

sustainability studies to students?; and C6 - To what extent do students enroll in available courses that engage sustainability issues/topics?. It should be noted that the comments made by the respondent for Humanities and Education for questions C5 and C6 are the same as the comment made for C4.

Regarding the respondent from CERMES, comments were made for question *C1 – To what extent does the department/unit offer courses focused on sustainability including its social, economic, and environmental dimensions?* – and question *R18 – Does the department/unit house any research institute/unit that studies sustainability issues/aspects?*. The comment for C1 stated that the main focus of the CERMES MSc programme was that of sustainability, and the comment for question R18 noted that CERMES is, in fact, a research institute that studies issues and aspects related to sustainability.

University of the West Indies Cave Hill MESCA Audit Tool (Part B – University Management and Operations Responses)

Introduction

The Sampling Method

The data collection took place in April and May, 2011. Several departmental offices were canvassed by the researcher in person, and after introduction, 3-4 tools were left in these offices to be distributed amongst key officers. In the weeks that progressed, numerous follow up visits ensued to help ensure an

adequate response and collection rate, and where possible appointments to consult with these key officers (administrative staff) in person. The end of semester made consultation difficult as most of these staff members were involved in workshops, meetings, or were simply on leave. Overall, there were nine (9) completed Audit Tools from a diverse group of departments on the Cave Hill campus.

The Sample

Responses were submitted by the following six (6) departments. This is not a reflection of all departments canvassed for the audit exercise. The Office of Student, Corporate and Alumni Relations; Maintenance; and the Office of Planning and Projects provided two (2) respondents respectively. Quality Assurance and the Office of Student Affairs-Admissions had one (1), while Campus I.T. Services rendered one (1) completed tool. This last department elected to act as one - represented by the combined responses of four (4) individuals.

Table 29: Sample by department

Department	n=
Office of Student, Corporate and Alumni Relations	2
Maintenance	2
Campus I.T. Services	1
Office of Planning and Projects	2
Quality Assurance	1
Office of Student Affairs-Admissions	1
Total	9

The Instrument

The Audit tool consisted of 34 questions, divided into nine sections.

Responses from Data Collection

Planning & Co-ordination

Overall, the lowest score in this section was 0.17 (lack of evidence), obtained by the first respondent from the Office of Student, Corporate and Alumni Relations. The highest score in this section was 2.33 (reasonable performance), obtained by both of the respondents from the Maintenance Department. Also, scores of 2.17 (reasonable performance) and 2.00 (reasonable performance) were recorded by the first respondent from the Office of Planning and Projects, and the respondent from Office of Student Affairs – Admissions respectively.

Table 30: Scores for the Planning and Co-ordination section, by department

Department	n=	P1	P2	P3	P4	P5	P6	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	X	X	X	X	X	1	0.17
	1	X	X	3	1	1	1	1.00
<u>Maintenance</u>	1	3	3	3	1	3	1	2.33
	1	2	2	3	2	3	2	2.33
<u>Campus I.T. Services</u>	1	1	1	1	0	X	X	0.50
<u>Office of Planning and Projects</u>	1	2	2	3	1	3	2	2.17
	1	X	2	2	2	3	X	1.50
<u>Quality Assurance</u>	1	3	3	2	0	X	X	1.33
<u>Office of Student Affairs - Admissions</u>	1	2	2	3	2	2	1	2.00
Total	9							

Regarding the individual questions in this section, the lowest score was X (no information) while the highest recorded score was 3 (good performance).

Human Resources

Overall, the lowest score in this section was 0.00 (lack of evidence), obtained by the first respondent from the Office of Student, Corporate and Alumni Relations. The highest score in this section was 1.67 (poor performance), obtained by one of the respondents from the Office of Planning and Projects, the respondent from the Quality Assurance Department, and the respondent from the Office of Student Affairs - Admissions. Also, a score of 1.33 (poor performance) was recorded by both of the respondents from the Maintenance Department (see Table 3).

Table 31: Scores for the Human Resources section, by department

Department	n=	HR7	HR8	HR9	HR10	HR11	HR12	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	X	X	X	X	X	X	0.00
	1	1	0	2	4	0	2	1.50
<u>Maintenance</u>	1	1	1	X	2	2	2	1.33
	1	1	2	2	1	2	X	1.33
<u>Campus I.T. Services</u>	1	0	0	1	1	1	1	0.67
<u>Office of Planning and Projects</u>	1	X	X	3	X	X	3	1.00
	1	1	X	X	3	3	3	1.67
<u>Quality Assurance</u>	1	0	1	0	2	4	3	1.67

<u>Office of Student Affairs - Admissions</u>	1	0	0	2	2	3	3	1.67
Total	9							

With respect to the individual questions, the lowest score was X (no information) while the highest score was 4 (excellent performance).

Buildings and Grounds

Overall, the lowest score in this section was 0.67 (lack of evidence), obtained by the first respondent from the Office of Student, Corporate and Alumni Relations. The highest score in this section was 3.00 (good performance), obtained by one of the respondents from the Office of Planning and Projects, the respondent from the Quality Assurance Department, and the respondent from the Office of Student Affairs - Admissions. Also, a score of 1.33 (poor performance) was recorded by both of the respondents from the Maintenance Department (see Table 4).

Table 32: Scores for the Buildings and Grounds section, by department

Department	n=	B13	B14	B15	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	1	1	1	1.00
	1	0	1	4	2.00
<u>Maintenance</u>	1	X	3	4	2.67
	1	2	3	3	3.00
<u>Campus I.T. Services</u>	1	1	0	0	0.67
<u>Office of Planning and Projects</u>	1	3	3	3	3.00
	1	3	X	2	1.67
<u>Quality Assurance</u>	1	X	0	2	0.67
<u>Office of Student Affairs - Admissions</u>	1	3	2	3	2.67
Total	9				

With regard to the individual questions in this section, the lowest score was X (no information) while the highest score recorded was 4 (excellent performance).

Waste Management

Overall, the lowest score in this section was 0.40 (lack of evidence), obtained by the respondents from the Quality Assurance Department, the Office of Student Affairs - Admissions and the Office of Student, Corporate and Alumni Relations. The highest score in this section was 2.40 (reasonable performance), obtained by one of the respondents from the Maintenance Department. Also, a score of 1.80 (poor performance) was recorded by one of the respondents from the Office of Planning and Projects (see Table 5)

Table 33: Scores for the Waste Management section, by department

Department	n=	W16	W17	W18	W19	W20	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	1	1	0	0	0	0.40
	1	0	1	0	X	1	0.40
<u>Maintenance</u>	1	2	4	2	X	X	1.60
	1	2	3	2	3	2	2.40
<u>Campus I.T. Services</u>	1	1	2	1	1	0	1.00
<u>Office of Planning and Projects</u>	1	0	3	2	3	0	1.60
	1	2	3	2	2	X	1.80
<u>Quality Assurance</u>	1	2	X	X	X	X	0.40
<u>Office of Student Affairs - Admissions</u>	1	X	X	2	X	X	0.40
Total	9						

With respect to the individual questions in this section, the lowest score was X (no information) while the highest score was 3 (good performance).

Energy Management

Overall, the lowest score in this section was 0.00 (lack of evidence), obtained by the respondent from the Quality Assurance Department. The highest score in this section was 2.67 (reasonable performance), obtained by one of the respondents from the Maintenance Department. Also, a score of 2.00 (reasonable performance) was recorded by both of the respondents from the Office of Planning and Projects.

Table 34: Scores for the Energy Management section, by department

Department	n=	EM21	EM22	EM23	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	0	0	4	1.33
	1	1	X	1	0.67
<u>Maintenance</u>	1	X	2	X	0.67
	1	3	3	2	2.67
<u>Campus I.T. Services</u>	1	1	1	2	1.33
<u>Office of Planning and Projects</u>	1	0	3	3	2.00
	1	X	3	3	2.00

<u>Quality Assurance</u>	1	X	X	X	0.00
<u>Office of Student Affairs - Admissions</u>	1	X	2	2	1.33
Total	9				

Regarding the individual questions, the lowest score was X (no information) while the highest score recorded was 4 (excellent performance).

Water Management

Overall, the lowest score in this section was 0.00 (lack of evidence), obtained by the first respondent from the Maintenance Department, and the first respondent from the Office of Student, Corporate and Alumni Relations. The highest score in this section was 3.00 (good performance), obtained by the second respondent from the Maintenance Department. Also, scores of 2.33 (reasonable performance) and 2.00 (reasonable performance) were recorded by the first respondent and the second respondent from the Office of Planning and Projects respectively.

Table 35: Scores for the Water Management section, by department

Department	n=	WM24	WM25	WM26	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	0	0	0	0.00
	1	1	1	1	1.00
<u>Maintenance</u>	1	X	X	X	0.00
	1	3	3	3	3.00
<u>Campus I.T. Services</u>	1	1	0	X	0.33
<u>Office of Planning and Projects</u>	1	3	3	1	2.33
	1	3	3	X	2.00
<u>Quality Assurance</u>	1	1	X	X	0.33
<u>Office of Student Affairs - Admissions</u>	1	2	X	X	0.67
Total	9				

With regard to the individual questions in this section, the lowest score was X (no information) while the highest recorded score was 3 (good performance).

Financial

Overall, the lowest score in this section was 0.00 (lack of evidence) while the highest score recorded was 2.00 (reasonable performance), obtained only by the second respondent from the Maintenance Department and the first respondent from the Office of Planning and Projects (see Table 8).

Table 36: Scores for the Financial section, by department

Department	n=	F27	F28	F29	Mean
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<u>Office of Student, Corporate and Alumni Relations</u>	1	X	X	X	0.00
	1	X	0	X	0.00
<u>Maintenance</u>	1	X	X	X	0.00
	1	2	2	2	2.00
<u>Campus I.T. Services</u>	1	X	X	X	0.00
<u>Office of Planning and Projects</u>	1	X	3	3	2.00
	1	X	X	X	0.00
<u>Quality Assurance</u>	1	X	X	X	0.00
<u>Office of Student Affairs - Admissions</u>	1	X	X	X	0.00
Total	9				

With respect to the individual questions in this section, the lowest score was X (no information) while the highest score was 3 (good performance).

Public Engagement

Overall, the lowest score in this section was 0.00 (lack of evidence), obtained by the respondent from Campus I.T. Services, the second respondent from the Office of Planning and Projects, the respondent from the Office of Student Affairs - Admissions, and the first respondent from the Office of Student, Corporate and Alumni Relations. The highest score in this section was 3.00 (good performance), obtained by the first respondent from the Office of Planning and Projects, and the respondent from the Quality Assurance Department. Also, a score of 2.00 (reasonable performance) was recorded by the second respondent from the Maintenance Department.

Table 37: Scores for the Public Engagement section, by department

Department	n=	PR30	PR31	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	X	0	0.00
	1	X	1	0.50
<u>Maintenance</u>	1	X	1	0.50
	1	2	2	2.00
<u>Campus I.T. Services</u>	1	X	X	0.00
<u>Office of Planning and Projects</u>	1	3	3	3.00
	1	X	X	0.00

<u>Quality Assurance</u>	1	3	3	3.00
<u>Office of Student Affairs - Admissions</u>	1	X	X	0.00
Total	9			

Diversity

Overall, the lowest score in this section was 0.33 (lack of evidence), obtained by the first respondent from the Maintenance Department and the respondent from Campus I.T. Services. The highest score in this section was 2.33 (reasonable performance), obtained by the second respondent from the Office of Planning and Projects, the respondent from the Office of Student Affairs - Admissions, and the second respondent from the Office of Student, Corporate and Alumni Relations. Also, a score of 2.00 (reasonable performance) was recorded by the second respondent from the Maintenance Department.

Table 38: Scores for the Diversity section, by department

Department	n=	D32	D33	D34	Mean
<u>Office of Student, Corporate and Alumni Relations</u>	1	2	2	2	2.00
	1	1	2	4	2.33
<u>Maintenance</u>	1	X	X	1	0.33
	1	2	2	2	2.00
<u>Campus I.T. Services</u>	1	X	X	1	0.33
<u>Office of Planning and Projects</u>	1	2	X	3	1.67
	1	2	2	3	2.33
<u>Quality Assurance</u>	1	X	2	3	1.67
<u>Office of Student Affairs - Admissions</u>	1	3	2	2	2.33
Total	9				

Regarding the individual questions in this section, the lowest score was X (no information) while the highest score recorded was 4 (excellent performance).

Review of Comments

Very few comments were made, as persons in some instances voiced that they were not knowledgeable on the issue or could not see the relevance of the given department's participation in this specific audit exercise. Comments were as follows:

EM- Energy Management

One respondent outlined that they recalled that an energy audit was conducted in 2010.

WM- Water Management

Storm water tanks are in place, and rain water is collected in water storage facilities and utilized campus wide for irrigation. Public water is not used for these purposes.

D- Diversity

Through the recycling programme initiative, all plastic bottles were collected and sold, and the proceeds went towards assisting students in need.

University of the West Indies Cave Hill MESCA Audit Tool (Part C – Students Responses)

The Sampling Method

Data collection amongst a general population of students began over the first week in April, and continued till the 15th of April 2011. The time frame specified for the collection of data from respondents was nearing the end of the semester and the examination period. Bearing in mind that the student population decreased significantly over this period, the researcher canvassed key meeting areas specific to each faculty, along with the halls of residence, and lecture rooms where teaching was still taking place on campus. The need for student leadership involvement in the audit exercise was paramount. Numerous visits were made to the Guild of the Students, and key stakeholders and data collection facilitators identified. Accordingly several student representatives took part in the audit.

The Sample

One hundred (100) students made up the sample. Each faculty was represented in the final evaluation. The sample was as follows:

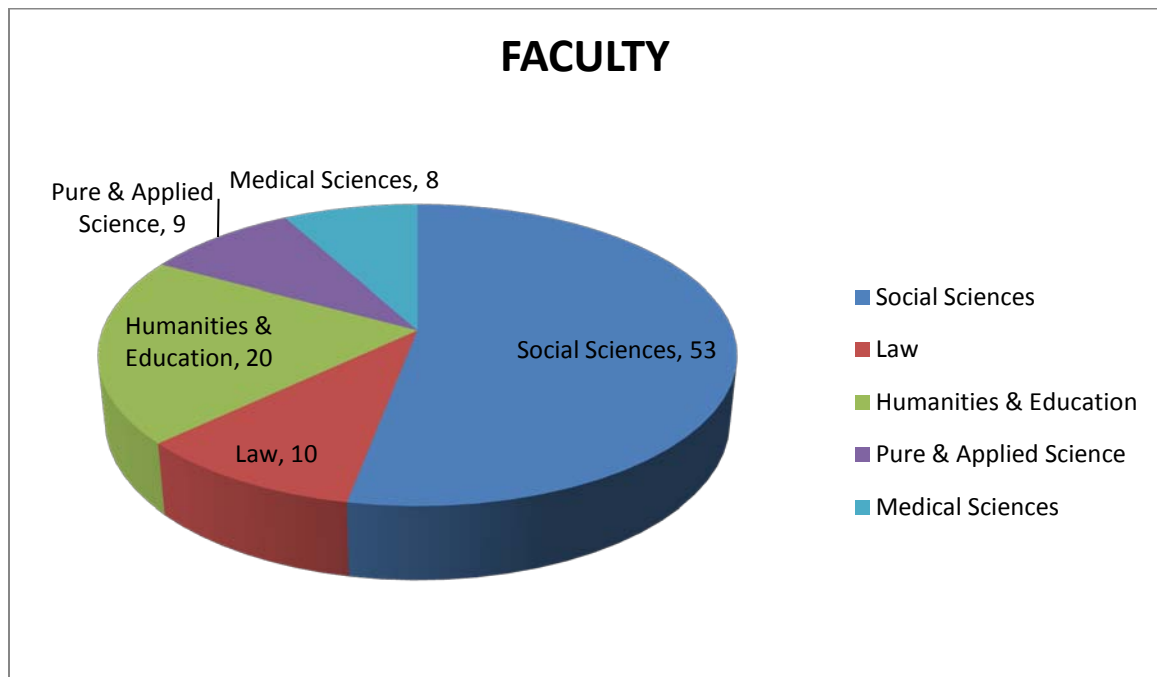


Figure 8 – Number of students sampled, per faculty

The Instrument

The student questionnaire was broken into three sections: Student Life (4 questions), Student Organization and Governance (4 questions), and Student Learning Outcomes (5 questions)

Figure 5 outlined the rating scale.

Assessment Indicator Rating Scale		
Score		
X	=	Don't know/no information concerning this
0	=	None/there is total lack of evidence on this indicator
1	=	A little/evidence shows poor performance
2	=	Adequate/evidence shows reasonable performance
3	=	Substantial/evidence shows good performance
4	=	A great deal/excellent performance

Figure 9: MESCA audit tool assessment indicator rating scale

Responses from Data Collection

Student Life

Table 39: Arithmetic means for Student Life section, by faculty

Faculty	n=	SL1	SL2	SL3	SL4	Student Life
Humanities and Education	20	0.5	0.35	0.3	0.85	0.5
Social Sciences	53	0.62	0.53	0.38	1.08	0.65
Law	10	0	0.4	0.3	1.7	0.6
Pure and Applied Science	9	0.89	0.89	1.11	1.22	0.78
Medical Sciences	8	0.63	0.25	0.38	0.13	0.35
Total	100					

Overall, the lowest score in this section was 0.35 (lack of evidence) while the highest score in this section was 0.78 (lack of evidence). This indicated that either various programs that would aid in improving student life on campus should be implemented or that students should be educated about and encouraged to participate in the existing programs.

The question in this section with the lowest score was SL1 which received a score of 0 (lack of evidence) from responses obtained from the Faculty of Law. The highest scoring question was SL4 which received a score of 1.7 (poor performance) from the answers which were also acquired from the Faculty of Law.

Student Organization and Governance

Table 40: Arithmetic means for Student Organization and Governance section, by faculty

Faculty	n=	SG5	SG6	SG7	SG8	Student Organization and Governance
Humanities and Education	20	0.8	1.15	0.6	1.4	0.99
Social Sciences	53	0.91	1.32	0.94	1.51	1.17
Law	10	0.4	1.1	0.3	1.6	0.85
Pure and Applied Science	9	0.89	1.22	0.67	1.67	1.11
Medical Sciences	8	1.38	0.38	1.63	2	1.1
Total	100					

Overall, the lowest score in this section was 0.85 (lack of evidence) while the highest score attained was 1.17 (poor performance). These scores indicated that the organisations responsible for bringing students together were not as effective as they should be and that measures needed to be taken to promote student awareness as well as student participation in these organisations.

The lowest scoring question in this section was SG7 which obtained a score of 0.3 (lack of evidence) from the replies obtained from members of the Faculty of Law. The question with the highest score was SG8 with a score of 1.67 (poor performance) which was achieved via the responses of the members of the Faculty of Pure and Applied Science. However, a score of 1.63 (poor performance) was also attained for SG7 from answers obtained from the Faculty of Medical Sciences and members of the Faculty of Social Sciences provided responses that resulted in a score of 1.51 (poor performance) for SG8.

Student Learning Outcomes

Table 41: Arithmetic means for Student Learning Outcomes section, by faculty

Faculty	n=	SO9	SO10	SO11	SO12	SO13	Student Learning Outcomes
Humanities and Education	20	1.8	0.65	0.55	0.65	1.25	0.99
Social Sciences	53	1.77	1.08	1.13	1.23	1.53	1.36
Law	10	1.2	1	1.1	1.3	1.5	1.22
Pure and Applied Science	9	2	1.33	1.67	1.78	1.33	1.62
Medical Sciences	8	0.63	0.5	1.5	1.38	0.88	0.98
Total	100						

Overall, the lowest score for this section was 0.98 (lack of evidence) while the highest score was 1.62 (poor performance). These scores signified that there is a need to employ programs and strategies that would afford students the opportunity to put what they learn into practice.

In this section, the lowest scoring question was SO10 which obtained a score of 0.5 (lack of evidence) based on the responses from the Faculty of Medical Sciences. The highest scoring question was SO9 which achieved a score of 2 (reasonable performance) as a result of the answers gathered from members of the Faculty of Pure and Applied Science. Other high scores included 1.8 (poor performance) and 1.77 (poor performance) for SO9 from answers obtained from the Faculty of Humanities and Education and the Faculty of Social Sciences respectively, and a score of 1.78 (poor performance) for SO12 from the responses made by the members of the Faculty of Pure and Applied Science.

Review of Comments According to Faculty

Introduction

This section illustrated the general trends in the comments provided by students that participated in the MESCA Audit exercise.

Humanities and Education

SL1 – To what extent are orientation programmes on sustainability available?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic.

SL2 – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall.

SL3 – To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?

Many of the respondents did not comment on this item but one respondent outlined that initiatives are in place, and are facilitated through student organisations.

SL4 – To what extent is career counseling (on work opportunities related to sustainability) available?

The responses indicated that career counselling is available through programmes that are implemented by Student Services, and further augmented on Career Day when various showcases are displayed. However, some student responses point out the fact that these opportunities were not geared towards their area of study, while others were simply unaware of any such initiatives.

SG5 – To what extent are student groups collaborating with administration in the areas of sustainability?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic. However, one respondent noted that any such collaboration might be facilitated through the Guild of Students and other Student Representatives.

SG6 – To what extent are students willing to take responsibility in sustainability activities?

Those respondents that did comment noted that the activities of Student Organisations are centred on sustainability but many did not have the drive to push certain initiatives. Also, one respondent made mention of the utilisation of the various recycling bins which they thought indicated a general awareness of environmental issues and preservation.

SG7 – Are there any student groups with a sustainability/environmental focus?

Most students did not comment on this question. However, those that did mentioned the 4H Club.

SG8 – To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g. sustainable livelihoods training, health, human rights, religion, culture)

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic. However, those that did respond mentioned Christian

organisations on campus such as UCCF and Advent Fellowship. Also, a respondent mentioned that student participation in these organisations is minimal.

SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics?

Responses indicate that students may offer innovative methodologies if given the opportunity, which may assist in effectively dealing with the related issues.

SO10 – To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?

No comments rendered by respondents.

SO11 – To what extent have students been able to explore the connections between their chosen study area and sustainability?

Respondents noted that generally sustainability was not a fixture on the national agenda. Therefore most courses of study did not draw a connection to these issues, and career showcases when available neglect the notion of sustainability

SO12 – To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?

No comments rendered by respondents.

SO13 – To what extent are students able to contribute practical solutions to real world sustainability challenges?

A number of respondents were admittedly unsure just how much emphasis is placed on student voice and opinion, or concerns on the issue of sustainability, by the given institution.

Law

SL1 – To what extent are orientation programmes on sustainability available?

The majority of respondents were not aware of any such programmes. Furthermore, some stated that if such programmes exist they are not well advertised.

SL2 – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall.

SL3 – To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall.

SL4 – To what extent is career counseling (on work opportunities related to sustainability) available?

The responses indicated that career counselling is available through programmes that are implemented by Student Services and Student Affairs, facilitating various seminars, workshops and counselling exercises.

SG5 – To what extent are student groups collaborating with administration in the areas of sustainability?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic. Many simply noted that no such organisations are present. In contrast, two respondents noted that any such collaboration might be facilitated through the Guild of Students.

SG6 – To what extent are students willing to take responsibility in sustainability activities?

Respondents commented that student organisations try to find avenues to engage in such activities (i.e. garbage separation initiative). However, students generally tend to talk around the issues, rather than attempting to fix problems in a hands-on manner.

SG7 – Are there any student groups with a sustainability/environmental focus?

Most students were unaware of the existence of any such groups.

SG8 – To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g. sustainable livelihoods training, health, human rights, religion, culture)

Those that did respond mentioned organisations on campus such as Circle K, CERMES, UWI Harp and religious associations, which facilitate a form of voluntary service for its members.

SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics?

Responses indicate, that evidence of this is showed in student membership to the above mentioned organisations.

SO10 – To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?

No comments rendered by respondents.

SO11 – To what extent have students been able to explore the connections between their chosen study area and sustainability?

No comments rendered by respondents.

SO12 – To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?

No comments rendered by respondents.

SO13 – To what extent are students able to contribute practical solutions to real world sustainability challenges?

A number of respondents sighted that students' participation in the Garage Recycling Programme, and utilization of various bins placed around the campus as one such practical response.

Medical Sciences

SL1 – To what extent are orientation programmes on sustainability available?

No comments rendered by respondents.

SL2 – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall.

SL3 – To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall.

SL4 – To what extent is career counseling (on work opportunities related to sustainability) available?

No comments rendered by respondents.

SG5 – To what extent are student groups collaborating with administration in the areas of sustainability?

One student outlined that student groups from the Faculty of Pure and Applied Sciences has initiatives in place, such as, the Sea Turtle Programme as tools that foster awareness of pressing issues in environmental sustainability.

SG6 – To what extent are students willing to take responsibility in sustainability activities?

No comments rendered by respondents.

SG7 – Are there any student groups with a sustainability/environmental focus?

Most students were unaware of the existence of any such groups.

SG8 – To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g. sustainable livelihoods training, health, human rights, religion, culture)

Those that did respond mentioned UWI Harp, as an organisation that offers some voluntary service by its members.

SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics?

No comments rendered by respondents.

SO10 – To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?

No comments rendered by respondents.

SO11 – To what extent have students been able to explore the connections between their chosen study area and sustainability?

No comments rendered by respondents.

SO12 – To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?

No comments rendered by respondents.

SO13 – To what extent are students able to contribute practical solutions to real world sustainability challenges?

No comments rendered by respondents.

Pure and Applied Science

SL1 – To what extent are orientation programmes on sustainability available?

The only evidence of this is through a few seminars, and one course that focused on renewable energy. The majority of respondents commented that there are programmes in place, but they are not easily accessible to students outside the given faculty.

SL2 – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

A respondent noted that sustainable lifestyle in terms of the solar heating of water, is a fixture on halls. Lifestyle practices are not engendered, and there is a general waste of commodities by students.

SL3 – To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?

The majority of respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall. One pointed out that students in general are not very environmentally conscious.

SL4 – To what extent is career counseling (on work opportunities related to sustainability) available?

The responses indicated that career counselling is available through programmes that are implemented by Student Services, but not necessarily utilized by students. Some deemed these programmes not to be career counselling as they do not out rightly encourage ways for persons to become economically viable in specific fields, but just highlighted career opportunities. Others noted that in the area of environmental sustainability CERMES offers adequate career counselling.

SG5 – To what extent are student groups collaborating with administration in the areas of sustainability?

Many respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic. However, respondents noted that any such collaboration might be facilitated through courses on offer in renewable energy. One respondent noted that students are willing but no solid financing is available for various schemes that might be proposed.

SG6 – To what extent are students willing to take responsibility in sustainability activities?

Students are generally not willing to make an effort to participate in such exercises; but those in the biological and chemical sciences, who have a greater understanding of the impact of humans on the environment, are more willing.

SG7 – Are there any student groups with a sustainability/environmental focus?

Most students were unaware of any such groups. However, those that had knowledge mentioned the Rotary Club and CERMES.

SG8 – To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g. sustainable livelihoods training, health, human rights, religion, culture)

Those that did respond mentioned organisations on campus such as CERMES, and students' willingness to volunteer in the Sea Turtle Project.

SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics?

Responses indicated that students may be versed in the issues but the opportunities to communicate are lacking, in spite of the fact that there are various courses within the faculty which sensitize students to the issues surrounding sustainability.

SO10 – To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?

No comments rendered by respondents.

SO11 – To what extent have students been able to explore the connections between their chosen study area and sustainability?

Respondents noted almost all areas of study in the faculty can be connected to sustainability, especially in courses in ecology and renewable energy.

SO12 – To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?

The university has developed introductory course in renewable energy, and has computer software to determine the feasibility of sustainability projects available.

SO13 – To what extent are students able to contribute practical solutions to real world sustainability challenges?

A number of respondents were admittedly unsure just how much emphasis is placed on student concerns on issues of sustainability by the given institution, but noted if given the opportunity and training more students would contribute.

Social Sciences

SL1 – To what extent are orientation programmes on sustainability available?

Respondents noted that they heard of such programmes taking place, but they were unsure how to gain further information in this regard.

SL2 – To what extent are sustainable lifestyle practices engendered as halls of residence culture?

Respondents noted that sustainable lifestyle in terms of use of recycling bins are a part of hall culture.

SL3 – To what extent are sustainability initiatives in halls of residence begun and implemented by students themselves, without influence of academic staff?

Overall respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic, especially since many of the respondents did not live on hall.

SL4 – To what extent is career counseling (on work opportunities related to sustainability) available?

The responses indicated that career counselling is available through programmes that are implemented by Student Services, but not necessarily utilized by students.

SG5 – To what extent are student groups collaborating with administration in the areas of sustainability?

Many respondents did not provide comments on this question as they did not believe that they were knowledgeable concerning the topic. However, respondents noted that any such collaboration might be facilitated through the Guild of Students.

SG6 – To what extent are students willing to take responsibility in sustainability activities?

Students are willing generally to make an effort to place items in the recycling bins available.

SG7 – Are there any student groups with a sustainability/environmental focus?

Most students were unaware of any such groups. However, those that were mentioned the Rotary Club and CERMES.

SG8 – To what extent is there voluntary community service by students? (partnerships with schools, agencies, e.g. sustainable livelihoods training, health, human rights, religion, culture)

Those that did respond mentioned organisations on campus such as CERMES, and students' willingness to volunteer in the Sea Turtle Project, and cleaning of the beaches around the island.

SO9 – To what extent can students understand and communicate effectively about sustainability issues, practices, topics?

Responses indicate that students utilize class debate and outreach programmes to communicate on such issues.

SO10 – To what extent have students been enabled to develop and use an ethical perspective of themselves as a part of an inter-connected world?

One student outlined that almost every class in psychology, provides in depth instruction in ethical issues.

SO11 – To what extent have students been able to explore the connections between their chosen study area and sustainability?

Respondents noted areas of study in the faculty can be connected to sustainability, especially in sociology that speaks to sustainable development. And there are internships and part-time jobs on offer that provide a practical connection.

SO12 – To what extent are students developing technical skills and expertise needed to conceptualize and implement sustainable solutions to challenges?

Students in some cases are encouraged to use environmentally viable practices by lecturers, to ensure sustainable development.

SO13 – To what extent are students able to contribute practical solutions to real world sustainability challenges?

A number of respondents noted that through in class forums, and attendance at conferences, their contribution is made.