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Sustainability Assessment in Ghana's Higher Educational Institutions Using the Assessment Questionnaire as a Tool



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Introduction

Definition of Key Terms

This section explains three key terminologies as they relate to sustainability assessment in HEIs for better understanding of the various tools and processes used in the assessment;

(a) **Sustainability:** Sustainability is defined in this paper to mean the processes of managing, within the limits of available physical, natural and social campus resources, in ways that allow the living systems in which humans are embedded to thrive in perpetuity (Dunkley 2013). According to Geir (1994), it is paramount for our generation to manage the resource base such that the average quality of life we aspire to attain can potentially be shared by the generation unborn. Safeguarded within the United Nations' Millennium

Development Goals (MDGs) and Millennium Improvement Goals (MIGs), sustainability precepts has transcended through Global initiatives down the European Union's (EU) Sustainable Development Strategy (EU-SDS) and other National laws (Glavic and Lukman 2007), to currently, the Sustainable Development Goals (SDGs) initiatives. It has become a major focus in international political discourse in recent times for developing and sustaining economic programmes and projects, including; academic curricular, research, development and scholarship, and general HEIs campus management (Wright 2002). These are necessary for improving the quality of university campus life (UCL) for the present and future generations (Hameed and Waheed 2011).

(b) **Sustainability Assessment (SA):** Assessing sustainability, according to Bond et al. (2013), involves a process by which the implications of an initiative towards achieving sustainability are evaluated. In this study, SA is defined to imply all processes that direct decision-making in curriculum development, research and scholarship towards sustainability. Such initiatives could apply to a proposed or existing programme, policy or plan, or on an on going practices or activity, enactment of legislation or to undertake a new project. This paper, specifically, looks at sustainability practices in academic curricular, research, scholarship and development in selected

Ghanaian Universities' transition towards achieving key aspect of the sustainable development goals (SDGs).

- (c) **Sustainability Assessment tool (SAT):** SAT is a novel and reliable instrument for assessing the capacity for sustainability of various programmes, services and projects in the public and private sectors, including HEIs. An agglomeration of tools exists today (AULSF 2009; GC 2002; Roorda 2001) for integrating sustainable development into University education (Lozano 2006; Shriberg 2004). In this study the SAQ was used as a tool for such assessment. This tool was developed by the University Leaders for a Sustainable Future (AULSF) with input from diverse key stakeholders (AULSF 2009). It is qualitative in nature and assists in assessing the extent to which HEIs are sustainable in key aspects of HEIs (Alshuwaikhat et al. 2016) operations, including curriculum, research, scholarship and development.

Overview of Global Sustainability Initiatives in HEIs

Over the past two decades, HEIs have intensified efforts at addressing and supporting sustainability challenges in HEIs of learning (Krizek et al. 2011). Many universities over the world have devised and implemented numerous sustainable initiatives by adjusting and restructuring their teaching and learning curriculum, research and scholarship, campus operations and financial management using sustainability principles and integrating them into campus operations that conform to best practices (Glavic and Lukman 2007).

Quite a number of HEI's initiatives have been successfully implemented in advanced countries with positive results since sustainability requirement became imperative (Alshuwaikhat et al. 2016; Krizek et al. 2011). However, not too many universities in emerging economies, including Ghana, have recorded such best practices in their annals due to non-holistic campus sustainability assessments, using either, known or novel sustainability tools. What pertains, in most instances, are not the required restructuring and adjustments needed for sustainability integration

in Ghanaian HEIs. The "whole-university" approach, which among others, reconsiders how higher education can handle and manage sustainability challenges by adjusting curriculum, research, scholarship and development, through to general campus management, with stakeholder involvement (Alshuwaikhat et al. 2016; McMillan and Dyball 2009) misses out on HEIs in emerging countries.

According to Alshuwaikhat et al. (2016), the Talloires Declaration, mooted by a team of HEI executives (HEIEs) to foster sustainability in HEIs, started in 1990. Two decades later, the initiative spread to 52 countries with over 421 HEI executives signing the declaration. Most of the signatories were from developed countries (Alshuwaikhat et al. 2016). The association of university leaders for a sustainable future (ULSF) followed later with a similar initiative. Their aim was to promote sustainability globally in the area of research, scholarship and development, teaching curriculum, operations and community outreach in HEIs through research, assessment and publications (McMillan and Dyball 2009). In 1993, another sustainability group known as 'Second Nature (SN)' directed a similar initiative, aimed at bringing about total transformation of university education by supporting management and leaders of HEIs to make their institutions just, healthy, and livable for all (Nixon and Glasser 2002). In 2006, the Australasian campuses towards sustainability (ACTS) group for promoting global dialogue in relation to sustainability in higher education gained momentum when it joined forces with the Environmental association for universities and colleges (EAUC) in the United Kingdom and the Association for the advancement of sustainability in higher education (AASHE) in the United States to distribute HEIs member resources around the world. Literature on HEIs sustainability initiatives in the developing countries and for that matter, Ghana's HEIs, on the other hand, were found to be scanty, with no clear direction. These evidence of sustainability initiatives existed in isolated instances, embedded in a number of campus programmes and activities, and to a greater extent, supported exogenously.

Evidence of Sustainability Practices in Ghana's HEI

HEIs' sustainability practices in Ghana, although not supported by formal policy documents, were identified to exist in University campuses in four main forms, along the construct of Krizek et al. (2011);

(a) Students Campus Initiatives (SCI)

Sustainability initiatives carried out under SCI, were seen in a form where students of a particular department or belonging to an association of a particular course or programme, who in one way or the other have had encounter with sustainability discourse and wanting to advocate for or practicalise it, start by calling for various sustainability-related services and programmes on campuses. University management, normally at this stage, either resist such initiatives or may give minimal attention and support to them. To put such initiatives to work, determined students organises and launch out their own efforts, which in most University campuses in Ghana are characterised with activities such as, single department tree planting or campus greening exercises, immunisation awareness campaigns, recycling programs, fitness and walking campaigns, campaigns to boycott use of plastics and energy conservation campaigns. When faculty buys into such efforts, it may take the form of either creating new sustainability course work(s), embarking on fieldwork(s)/fieldtrip(s) or projects and awareness campaigns to address a particular issue; to limit use of hazardous chemicals, consumption of certain harmful products or campaign on why a certain initiative should be encouraged or discouraged. This initiative phase can linger on or die off with the exit of that particular year group of student advocates or may feed into subsequent phases as new initiatives may be brought forth by new entrant's campaigners into the discourse. When University Management fails to respond to the evolution of these efforts in a timely fashion, the initiative becomes a de facto definition of the culture of sustainability efforts on that campus (Beringer and Adom̄s̄ent 2008). Management may find it difficult to mainstream such efforts

into governance structures, as their origin renders them difficult to coordinate. Sometimes these SCI initiatives compete with management goals with no clear directions. As a result, it is not far fetch to conclude that SCI are often given low profile if university management does not see the need to buy into them.

(b) Sustainability for Cost Savings Initiatives (SCSI)

In this form, sustainability initiatives are mooted by senior members or students' with strong involvement of senior members in activities that may have cost saving aspects of a business case and environmental sustainability component. University management will gladly buy into such sustainability initiatives when they see it inspire cost savings and a high tendency to improve campus reputation. Such initiatives were found within programmes that call for use of alternative energy sources, energy efficiency, water conservation, climate change and green branding. When SCSI is associated with senior members within the group, it fosters a greater collaboration within the operations of the group strong enough to even influence heads of departments (HoDs) and deans of faculties (DoFs) to develop new curriculum (major, minor or combine certificate programmes) and have it accepted and funded by university management.

(c) Transformational Management Leadership Initiative (TMI)

At the transformational management initiative (TMI) level, university management, or a group of them, openly promote a sustainability agenda and rally behind it as a central element of their management style. Management initiate and embrace the concept as a central value of their administration's goal and strategic plan and strive to get the support of University Councils or Boards. There is full executive leadership on sustainability with keen understanding of its tenets and vision for the future with TMI. Sustainability initiative at this level is given the highest priority with stakeholder engagement, especially, when it has strong

foreign funding component. This was observed to be present in most HEIs's top management levels in Ghana.

(d) **Integrated Sustainable Campus Community (ISCC)**

An integrated sustainable campus community is a self-actualised university campus that most HEI management often quote or aspire to have and encourage others to do so as well. ISCC is characterised by high level visionary leadership and a fully integrated sustainability novelty that enhances educational outcomes tied with sustainability-related operations, student life, staff, and community engagement activities. Educational experience is integrated into both the inside and outside the knowledge transfer process where students learn about sustainability in all majors and at the same time observe and learn from the campuses with practical models, sustainability principles and practices. Fully self-actualised and integrated sustainability campus communities worldwide were identified to include, the first zero-emission campus of Leuphana University (Germany), University of Gothenburg (Sweden), Trier University of Applied Sciences in Germany (Alshuwaikhat et al. 2016) and Ashesi University in Ghana. Here sustainability operations, student activities, and community partnerships are coordinated coherently in a systems-thinking mode in all university campus offices and faculties.

Characteristics and Challenges of Implementing Sustainability Initiatives in HEIs

According to Krizek et al. (2011), corporate institutions respond positively to issues of sustainability better than HEIs because the former have profit oriented shareholders with strong external determinants. Case studies of corporate organisations that have successfully implemented sustainability principles and practices to influence their core business models include; Dow Jones Sustainability Indexes, Dow (2010), Lubin and Esty (2010)

and the Volkswagen Group (2008). HEIs have only subtle stakeholders who are equally not immune to many of the external drivers in their attempt at shifting the paradigm towards sustainability (Wright 2010). Thus, sustainability practices across all walks of campus-life tend to be relatively more challenging than in the corporate business world (Bardaglio and Putman 2009).

According to Krizek et al. (2011), HEIs are typically tasked with the trinity of education, research and service. Working towards achieving these trio objectives, which in themselves have competing goals, may water down a focused orientation and create competing priorities since different constituents of the trinity demand different services. University campuses are largely made up of five entities; students, teaching staff (faculty), non-teaching staff, alumni and the community in which they serve. Each of the bodies has varying and sometimes competing priorities in terms of sustainability. For instance, waste segregation, composting, energy efficiency and recycling efforts may very much offer some experiential learning for students and the community but may contribute little towards advancing formal curricula or have any immediate impact on teaching and non-teaching staff. Likewise, with the rise in cross-cutting sustainability-oriented courses in Ghanaian Universities over the last 10 years, the impact is yet to be significantly felt in campus waste separation at source, renewable energy installations, including; biogas digesters, water conservation and recycling technologies. It is often difficult to uncover cross synergies between campus constituents. Campuses also faces management challenges akin to small cities as they need to provide an array of support services in an increasingly complex learning environment with limited resources. This promotes the sprawling of horizontal campus community with sometimes, diffused focus and shrinking revenues, especially where university management is asked to cut costs, increase productivity (teaching and research, quality leadership succession) but not the payroll (Krizek et al. 2011; Bardaglio and Putman 2009). This typical structure of HEIs, where power is concentrated at several levels, and with a culture of protecting tradition and

academic freedom, tend to hinder sweeping sustainability changes.

Known Tools for Sustainability Assessment in HEIs

Although a comprehensive list of potential tools exist for sustainability assessment and management processes in the corporate business world (CBW), Alshuwaikhat et al. (2016) outlines six (6) known ones useful for sustainability assessment operations in HEIs. These are;

1. *The sustainability tracking, assessment and rating system (STARS)*

“STARS” was developed by the Association for Advancement of Sustainability in Higher Education (AASHE). It is a “voluntary, self-reporting framework for recognizing and gauging relative progress toward sustainability for colleges and universities” (AASHE 2010). The objectives of STARS include; (a) providing a framework for understanding sustainability in all sectors of higher education; (b) enabling meaningful comparisons over time and across institutions using a common set of measurements developed with broad participation from the campus sustainability community; (c) creating incentives for continual improvement toward sustainability; (d) facilitating information sharing about higher education sustainability practices and performance and (e) building a stronger and more diverse campus sustainability community.

2. *The Auditing Instrument for Sustainability in Higher Education (AISHE)*

“AISHE” was developed by the Dutch Committee on Sustainable Higher Education (CDHO) and Niko Roordia to measure the level at which sustainable development is been integrated into HEIs. In other words, AISHE measures “sustainable education” based on a quality management model (Pipjelinck 2011; Roorda 2001).

3. *The Good Company's Sustainable Pathways Toolkit (GCSPT)*

“GCSPT” was produced by Good Company, a private sector business company, Good Company, based in the USA. Their objective was to produce a fairly simple and straight forward tool to market to potential university and college customers interested in sustainability assessment. The toolkit has 20 core indicators and 10 supplementary indicators, each with a performance benchmark attached (Good Company 2002).

4. *The Campus Sustainability Assessment Framework for Canadian Universities (CSAF)*

“CSAF” is a famous Canadian tool which gauges the level of sustainability of Canadian universities. It was developed by the Royal Road University in Canada and has gained international reputation in the realm of Sustainable Campus (Brand 2012; Roorda 2001).

5. *The Sustainability Competency and Opportunity Rating and Evaluation (S-CORE)*

“S-CORE” is a multi-purpose sustainability assessment tool that helps Organisations to determine whether they are on the right path to green growth and also identify new opportunities in the process. It was developed by AXIS Performance Advisors in collaboration with the International Sustainable Development Foundation and the Zero Waste Alliance (Brand 2012; Roorda 2001).

6. *The Sustainability Assessment Questionnaire (SAQ)*

“SAQ” is designed to assist in assessing the extent to which HEIs attain sustainability in teaching, research, operations and outreach. It is qualitative in nature and ensures that the major activities on campuses become ecologically sound, socially just, economically viable and humane for now and the future generations.

According to Gasparatos (2010), the selection of any of these tools, which in most cases, is

determined by the researcher, must be based on solid theoretical concept, good understanding of the economic, political and cultural needs and values of stakeholders. A number of methodological steps embedded within the tools make selection and use of any of the tools value judgement free. Tool selection, thus, frames the sustainability assessment with practical and ethical implications. Therefore by selecting a particular tool, the researcher subscribes to and reaffirms a specific worldview as the correct or most appropriate yardstick to measure an aspect of sustainability practice in HEIs (Krizek et al. 2011).

Methods and Tools

Employing exploratory research design, this study used the SAQ tool to assess integration of sustainability practices in two key university areas of operation; teaching and curriculum, and research and development towards sustainable development in ten (10) Ghanaian HEIs (Table 1). The first part assessed teaching and curriculum sustainability practices using five (5) semi-structured self-administered questions. The aim was to establish whether HEIs; (i). Offer specific programmes or curriculum on sustainability, (ii). Offer specific courses related to sustainability, (iii). Integrate sustainability topics in taught courses, (iv). Integrate fieldwork and internships in programmes or curriculum, (v). Address local sustainability issues and challenges in teaching programs and (vi). Allow students from different disciplines to offer, at least, a university-wide course on issues related to sustainability.

Further, there were a mixed of closed and open-ended questions asking management of HEIs to outline their academic programs and courses related to sustainability, specific sustainability degree programs, relevant mandatory courses for students and the extent of sustainability focus in various disciplines and interdisciplinary programmes (Table 2).

The second part consists of eight (8) closed questions on HEIs sustainability aspects of research, scholarship and development in Ghana. Management were asked to say 'Yes', 'No' or not

'Sure' to questions centered on the extent to which the university is involved in sustainability-oriented research and associated development opportunities for faculty and students, integration of local and global sustainability issues in the university's research agenda, the existence of specific sustainability units/centers and research outputs in fields related to sustainability (Table 3).

Results and Discussion

Integrating Sustainability into HEIs' Teaching and Curriculum

Teaching and curriculum development in HEIs is one important way of integrating sustainability principles and practices, and ecological literacy in students (Wright 2010). According to Bowser et al. (2014), Universities are better placed to do this by incorporating environmentally friendly education into their teaching and learning systems. From returned responses (Table 2) using the SAQ tool, averagely, less than half (42%) of the HEIs investigated responded positively ('Yes'), 38% said 'No' and 20% of the HEIs were 'Not sure' to all questions posed in Table 2. Tentatively, 53% of the Universities allowed students from different disciplines to take, at least one course (university-wide courses) on issues related to sustainability (Table 2). The sustainability focus on teaching and curriculum in conventional programmes is depicted by Fig. 1, where much concentration was found within the natural sciences (30%), followed by engineering (19%), physical sciences (16%), social sciences (15%), medicine and health sciences (12%) and Arts and humanities (8%) respectively.

Sustainability Related Research, Scholarship and Development in HEIs

Returned responses from the SAQ survey (Table 3) shows that 59% of HEIs are involved in research, scholarship and development in the area of sustainability, 63% HEIs encourage students and staff to research, undertake projects and write thesis or dissertations in and on sustainability related issues. Thirty three percent of the Universities offer faculty and school research funding

Sustainability Assessment in Ghana's Higher Educational Institutions Using the Assessment Questionnaire as a Tool, Table 1 Selected HEIs sustainability programmes/curriculum and field of study

Course/programme	Institute/department	University	Field
MSc and MPhil in Climate Change and Sustainable Development	Interdisciplinary	University of Ghana, Legon (UGL)	Multi-disciplinary
BA Geography	Geography and Resources Development		Natural resources
Post-graduate studies	School of Business		Climate change
BSc. Computer Science	Geography and Resources Development		Sustainable development
Bsc Nursing	Environmental Studies and Sanitation		Climatology
BSc planning etc	Computer science		Natural sciences
	Population studies, medical school etc	Medicine/Allied health sciences Management etc	
MSc. Climate Science and Meteorology	Interdisciplinary	Kwame Nkrumah University of Science & Technology (KNUST) -Kumasi	Multi-disciplinary
Doctor of Pharmacy	Department of Physics		Management
BSc. Emergency Nursing	Pharmacy		Natural resource
B.A Economics	Health		Climate change
B.A. Social Work	Architecture		Medicine
BSc planning	Computer Science		Health science
MSc. Renewable Energy	Renewable energy etc		Climate mitigation etc
BSc. Computer Science			
B.Sc. Dental Surgery			
B.Sc. Architecture			
MSc. Health Informatics etc			
MSc. Environmental, Science, Policy and Management	Interdisciplinary	Institute of Local Government Studies, Accra and Tamale (ILGS)	Multi-disciplinary
B.A. Public Sector Management	Urban and Environmental Management		Climate change
B.A. Community Development etc	Public Sector Management		Public Sector Management
	Community Development	Community Development etc	
Bsc. Environment and Development Studies	Interdisciplinary	Central University, Miotso-Tema (CU)	Multi-disciplinary
BSc planning	Environment and Development Studies		Environment and Development studies
BSc. Computer Science	Architecture		Computer science
B.Sc. Architecture	Engineering		Engineering
BSc Business management etc	Business management		Pharmacy etc
MA in Environment and Resource Management	Interdisciplinary	University of development studies (UDS)	Multi-disciplinary
B.Ed. Health Sciences	Faculty of Integrated development		Climate change
B.Sc. Renewable Natural Resources Management			Smart agriculture
BSc. Nurse Anesthesia			Medicine etc
B.Sc. Biotechnology and Molecular Biology etc			Allied health
		Planning etc	

(continued)

Sustainability Assessment in Ghana's Higher Educational Institutions Using the Assessment Questionnaire as a Tool, Table 1 (continued)

Course/programme	Institute/department	University	Field
BSc in software Engineering	Interdisciplinary	Ashesi University (AU)	Multi-disciplinary
BSc. Computer Science	Computer science		Climate change adaptation & mitigation
BSc in management information system etc	Management information technology		Computer science Business technology etc
B.Sc. Medical Laboratory Technology	Interdisciplinary	University of Cape Coast (UCC)	Multi-disciplinary
B.Sc. Agricultural Extension	Environment, Pharmacy		Smart agriculture
B.Sc. Animal Production	Medicine/Allied health sciences		Fisheries
B.A. Population and Health	Computer Science, Smart agriculture		Climate change adaptation & mitigation etc
B.Sc. Animal Production etc	Agricultural economics, Oil and gas studies Educational foundations, Distance learning Agriculture extension etc		
B B.Eng. Electronic and Communication Engineering. Sc. Bio-Medical Engineering	Interdisciplinary	Koforidua University of All Nations (ANU)	Multi-disciplinary
B.Eng. Oil and Gas Engineering	Electronic and Communication Bio-Medical Engineering Oil and Gas Engineering etc		Electronic and Communication Bio-Medical Engineering Oil and Gas Engineering etc
B.Sc. Information and Communication Technology (ICT)	Interdisciplinary Environmental Studies and Policy		
M.Sc. Environmental Studies and Policy	Management Information Systems	Ghana Institute of Management and Public Administration (GIMPA)	Multi-disciplinary Public policy
M.Sc. Management Information Systems	Information and Communication Technology (ICT)		Environmental policy Financial policy
MBA (Healthcare Management option)	Hospitality management etc		Business policy etc
B.Sc. Business Administration (Accounting), etc			
M.Sc. Engineering Project Management	Interdisciplinary		Ghana Technology University College
M.Sc. Engineering Project Management	Software Engineering	Mobile Internet Communication	
BSc. Computer Science	Mobile Internet Communication	Telecommunication Engineering etc	
B.Sc. Solar Engineering etc	Telecommunication Engineering etc		

Source: Based on Ghana National Accreditation Board data, 2017

Sustainability Assessment in Ghana's Higher Educational Institutions Using the Assessment Questionnaire as a Tool, Table 2 Programmes and curriculum bothering on sustainability

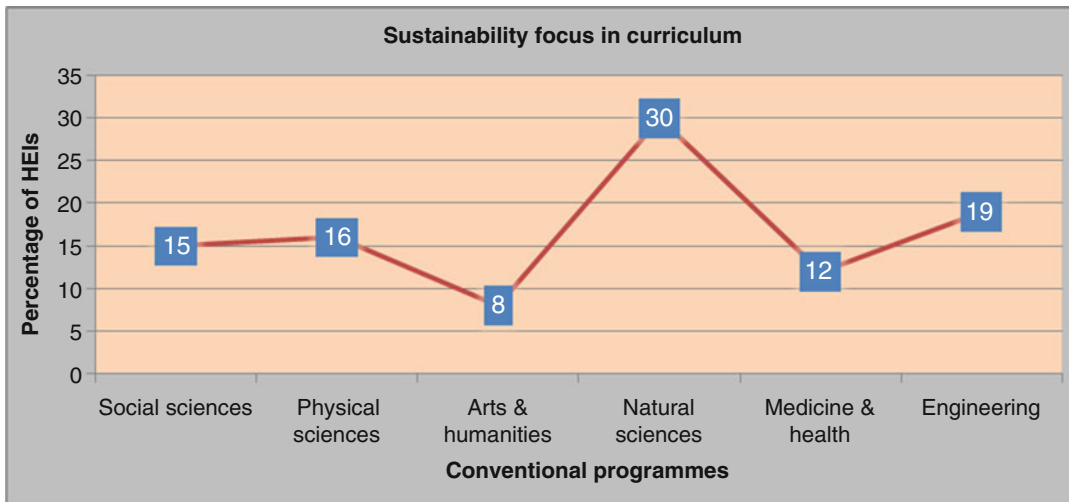
Teaching and programmes/ curriculum	Returned responses (%) n = 10		
	Yes	No	Not sure
1. Do you offer specific programmes/curriculum on sustainability?	47	23	30
2. Do you offer specific courses related to sustainability?	41	46	12
3. Do you integrate sustainability topics in taught courses, fieldwork and internships?	33	39	28
4. Are local sustainability issues and challenges addressed in teaching programs?	35	45	20
5. Do students from different backgrounds require to offer, at least, one course (university-wide courses) on issues related to sustainability?	53	37	10

in the area of sustainability for the various disciplines which is consistent with current best practices within Universities Worldwide (Comm and Mathaisel 2005). An appreciable number of HEIs (75%) collaborates with other institutions and industries in their quest for finding solutions to sustainability challenges and 62% already have in place research centers or units for sustainability studies. However, only 21% of the HEIs had prioritise sustainability aspects in their research outputs in journals, conference and seminar/workshop publications. This was also highly tied to research and scholarships with external collaborations, funding and support. When HEIs were asked to state 'Yes', 'No' or 'Not sure' to whether they devote substantial proportion of their research funding (>20%), specifically, to sustainability research, scholarships and development (Table 3), the survey results indicate only 8% of HEIs commits such amount of their research funding (>20%) to this initiative (Fig. 2). Twelve percent had no such intentions (Nil = 0%), 27% were spending small proportions (5–9% of research funds), 10% were doing so appreciably

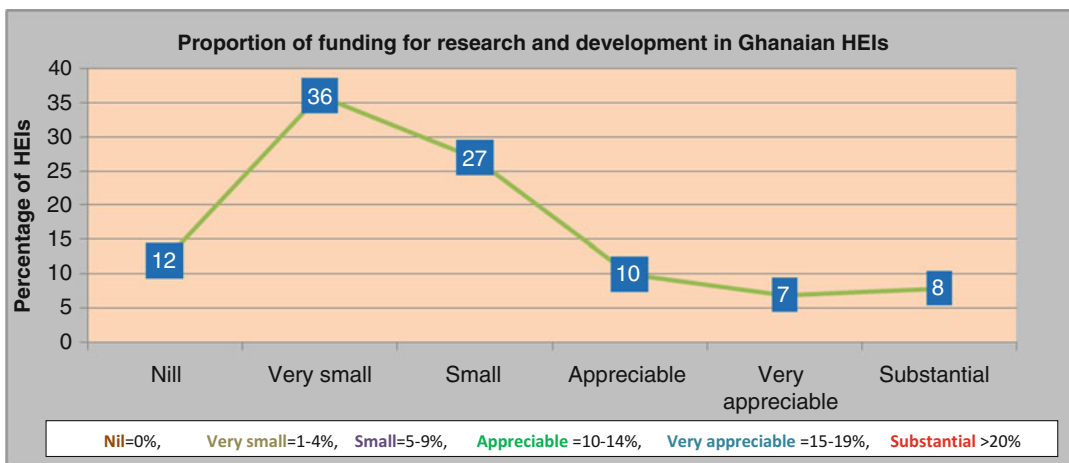
Sustainability Assessment in Ghana's Higher Educational Institutions Using the Assessment Questionnaire as a Tool, Table 3 Sustainability aspects of research, scholarship and development

Research, scholarship and development	Returned responses (%) n = 10		
	Yes	No	Not sure
1. Involved in research and development in the area of sustainability	59	19	12
2. Offer faculty/school research funding in the area of sustainability for the various disciplines	33	51	16
3. Encourage sustainability related thesis/ project designs by students or staff	63	26	11
4. Have local sustainability contents in their research agenda	46	41	13
5. Collaborates with other institutions and industries in pursuit of solutions to sustainability challenges	75	0.9	0.6
6. Have research centers/units/groups for sustainability	62	18	20
7. Prioritise sustainability aspects in the research outputs e.g., journals and conference publications	21	63	16
8. Devote substantial funding for sustainability research, scholarships and development	0.8	12	80

(10–14% of research funds) and 7% of HEIs were doing so very appreciable (spending 15–19% of research funds). Three public Universities (University of Ghana, University of Cape Coast and Kwame Nkrumah University of Science & Technology) and three private Universities (Ashesi, Central and All Nations) were found to be running comprehensive life-long action learning educational programmes and several courses that directly engage the local community on issues relevant to sustainability discourses.



Sustainability Assessment in Ghana’s Higher Educational Institutions Using the Assessment Questionnaire as a Tool, Fig. 1 HEIs sustainability focus in teaching and curriculum



Sustainability Assessment in Ghana’s Higher Educational Institutions Using the Assessment Questionnaire as a Tool, Fig. 2 Proportion of research funding specifically devoted to sustainability practices in HEIs

Conclusion and Recommendation

It is evident from the study that efforts at attaining the sustainable development goals (SDGs) are driving HEIs all over the World to formulate and implement sustainability initiatives. Although this paradigm shift permeate all spheres of a University’s campus life cycle, this paper assessed sustainability adjustment and restructuring in teaching and curriculum, and in research,

scholarship and development in ten (10) Ghanaian HEIs (Table 1) using the SAQ as a tool. The scope of sustainability practices in Universities in developing countries needed to broaden, especially in Ghana, if the desired goal to transform HEIs into centers of excellence in sustainability principles towards attaining the broader SDGs, envisioned in Ghana’s Vision 2030, are to be realised. There is evidence to show (Table 2, Fig. 1) that over the past decade, HEIs are offering specific

programmes, curriculum and teaching of courses relating to sustainability, but on limited scale, identified in the form of SCI, SCSI and TMI. There is a need for Ghana HEIs to promote sustainable campus practices that can offer management organisational changes that will move them to the fourth initiation phase (ISCC) to ensure inclusive and equitable quality education that promotes lifelong learning opportunities for all. Inferring from Walton and Galea (2005) to foster good governance and management at this level;

- (a) HEIs need to modernise their charters, decision-making systems and policies to reflect sustainability ethics, transparency and democracy.
- (b) HEIs must promote a vision of the future that prepare graduates with inter-disciplinary approaches to solving problems that integrates challenges of the twenty-first century through teaching, research and knowledge transfer.
- (c) HEIs must respond positively to policy agendas that provide transformational leadership for society in a complex, rapidly changing times, ensure equal opportunities, articulates human rights and understand employer demands in context of future needs.

Sustainability aptitude is cultivated by means of learning in lecture theaters and on the field through problem solving techniques. This has been observed to be beneficial as it brings cost saving to HEIs in areas; including use of energy, water, waste, transport human capital and emission of carbon dioxide (CO₂). The teaching and learning processes and community participation are equally enriched through knowledge and technology transfers. To consolidate gains in sustainability initiatives as well as broaden the scope in line with best practices globally, HEIs in Ghana, in collaboration with the responsible government ministry and other related stakeholders must endeavour to;

- (a) Integrate green and sustainability themes into teaching, curricula and research across diverse

academic programmes, centers, and initiatives that address sustainability issues.

- (b) Mandate every long essay, thesis, dissertations and projects to address sustainability challenges and sustainability impact assessment.
- (c) Provide adequate funding support for research and educational initiatives with focus on the addressing sustainability and green economy issues.
- (d) Embark on campus upgrading systems management in critical areas of campus operations, including; lighting systems, energy efficiency, reducing greenhouse gas outflows, decreasing waste, and improving transportation and operation efficiency.
- (e) Meet faculty members, non faculty staff, students and HEI communities at regularly intervals to foster partnership, create awareness, evaluate sustainability initiatives and recommend new approaches towards sustainable development.

In this way, sustainable campus, which is a community that “acts upon its local and global responsibilities to protect and enhance the health and wellbeing of humans and ecosystems”, can be guaranteed (Lozano 2010; Velazquez et al. 2006; Cole and Wright 2003) in HEIs.

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