



Institutional assessment tools for sustainability in higher education: strengths, weaknesses, and implications for practice and theory

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Abstract

This paper analyzes recent efforts to measure sustainability in higher education across institutions. The benefits of cross-institutional assessments include: identifying and benchmarking leaders and best practices; communicating common goals, experiences, and methods; and providing a directional tool to measure progress toward the concept of a “sustainable campus”. Ideal assessment tools identify the most important attributes of a sustainable campus, are calculable and comparable, measure more than eco-efficiency, assess processes and motivations and are comprehensible to multiple stakeholders. The 11 cross-institutional assessment tools reviewed in this paper vary in terms of stage of development and closeness to the “ideal tool”. These tools reveal (through their structure and content) the following critical parameters to achieving sustainability in higher education: decreasing throughput; pursuing incremental and systemic change simultaneously; including sustainability education as a central part of curricula; and engaging in cross-functional and cross-institutional efforts. © 2002 International Association of Universities. Published by Elsevier Science Ltd. All rights reserved.

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1. Introduction and rationale

The age-old adage of “What gets measured, gets done” is beginning to be applied to sustainability efforts in higher education. The inherent ambiguities involved in defining sustainability and the complexities of applying the concept to diverse institutional settings have thwarted comprehensive measurement efforts until quite recently. However, cross-institutional sustainability assessment is needed to advance strong initiatives

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and assist lagging colleges and universities. Simply put, campuses require methods of comparison to each other as well as to a vision of a “sustainable college or university” to ensure that they are moving in the right direction. The concept that Onisto (1999, p. 37) outlines for the economy as a whole applies to institutions of higher education: “Without a measure and value attached for the rates at which an economy consumes nature, there is no possibility for the market to act in any other interest than economic”. In other words, to get to the “bottom line” of sustainability, institutions require a natural, social and economic capital balance sheet. Although circumstances vary considerably on each campus, cross-institutional assessment tools minimize the effort involved in developing these balance sheets by sharing common experiences and goals.

Cross-institutional assessment tools identify sources of support and resistance for sustainability initiatives, which helps lead to effective sustainability policies, objectives, and programs. In a theme echoed in campuses across the world, Monteith and Sabbatini (1997, pp. 56–57) found that “people were supportive of the sustainability mantra, but when the implications became more clearly defined, disparities in approach and implementation became apparent”. Thus, assessment tools are important in operationalizing charters and policy statements about sustainability in higher education such as the Talloires Declaration (1990), Halifax Declaration (1991), Kyoto Declaration (1993) and Copernicus Charter (1993). “Although these documents contain important guidelines for education, none of them offers concrete prescriptions on an operational level for what Higher Education should do exactly in order to contribute maximally to sustainable development,” claims Roorda (2000). Assessment tools can help alleviate this problem through identification of best practices and focusing campus efforts on continual improvement. These tools also facilitate communication of progress within and across institutions, which is key to mutual success in moving toward the ambitious and amorphous target of sustainability in higher education.

To achieve these far-reaching benefits, cross-institutional assessment tools must be constructed and implemented wisely. The purpose of this article is to assist colleges, universities, non-profit organizations and others meet this goal by identifying attributes of ideal assessment tools and evaluating current efforts. The focus is on what current tools reveal (through their structure and content) about essential organizational attributes in moving toward sustainability. This focus reflects a bias toward process, which is necessary at this stage because most important tools have not been extensively used and thus cannot be evaluated in terms of effect. Nevertheless, attempts to assess sustainability reveal current knowledge and theories about defining and operationalizing the concept of a sustainable campus.

2. Attributes of ideal assessment tools

To measure sustainability in higher education, analysts must first develop criteria for cross-institutional assessment. David Orr as quoted by the Penn State Green Destiny Council (2000, p. 4), begins this process by proposing five criteria to rank campus sustainability: (1) What quantity of material goods does the college/university consume

on a per capita basis? (2) What are the university/college management policies for materials, waste, recycling, purchasing, landscaping, energy use, and building? (3) Does the curriculum engender ecological literacy? (4) Do university/college finances help build sustainable regional economies? (5) What do the graduates do in the world? These questions, although difficult to answer, do not “tinker around the edges”, as is the tendency of many environmental assessments; they deal with core issues of ecologically, socially and fiscally sustaining a society and campus. In general, ideal cross-institutional sustainability assessments:

1. *Identify important issues*: Sustainability assessment tools must address contextually appropriate issues of major importance to campus environmental, social and economic efforts and effects. Since many facets of colleges and universities potentially fall under the rubric of sustainability, the problem here is of parsimony. The task of the creator and user of assessment tools is to identify issues with broad effects and influence, yet specific measurement possibilities. Moreover, the tools must provide mechanisms to prioritize sustainability-related issues.
2. *Are calculable and comparable*: The ability to calculate progress toward sustainability is often a limiting factor in assessment. Campuses need quick, yet penetrating ways to measure status, progress, priorities and direction. These criteria do not imply that assessment tools must be exclusively quantitative. In fact, quantitative tools in isolation have little chance of expressing progress toward sustainability in all facets of a college or university since there is no well-defined “sustainable campus” upon which to base measures. On the other hand, qualitative data must be collected and analyzed in a manner that allows for cross-campus comparisons. The key is to find measurement methods that are flexible enough to capture organizational complexities and differences, yet specific enough to be calculable and comparable.
3. *Move beyond eco-efficiency*: The most common pitfall of assessment tools is that they measure eco-efficiency (Fussler, 1996) instead of true sustainability. This distinction is crucial as eco-efficiency indicators stress material utilization, environmental performance and regulatory compliance, while sustainability indicators stress issues at the nexus of the environment, society and economy with the goal of no negative impacts (O’Connor, 1995). For example, an eco-efficiency energy indicator would measure energy conservation, while a sustainability indicator would measure total greenhouse gas emissions against a goal of zero. The difference is of mindset in promoting incremental (i.e., eco-efficient) or systemic (i.e., sustainable) change; eco-efficiency ends with the incremental while sustainability incorporates both approaches. As Onisto (1999, p. 41) points out, the danger of relying solely on eco-efficiency indicators “comes from the appearance that something substantive is being done. It lulls people into feeling that the environment has been, and is adequately, considered”.
4. *Measure processes and motivations*: Since “sustainability is a process, not a destination” (Bandy II, 1998, p. 1), the tools to measure sustainability must delve deep into decision-making by asking about mission, rewards, incentives and other process-oriented outcomes. In this way, analysts capture dynamic processes and motivations—including direction, strategy, intent and comprehensiveness—as well

as present impacts. To identify levers for organizational change, assessment tools must ask “why” and “how” campuses pursue sustainability in addition to “what” they are currently doing.

5. *Stress comprehensibility*: Sustainability assessment tools must be comprehensible to a broad range of stakeholders. Thus, analysts must develop mechanisms for reporting that are verifiable and lucid. Given their potential importance as cross-campus communication tools in both process and outcome, comprehensibility should not be sacrificed for precision. However, this criterion does not preclude complicated methodology, as long as translation into understandable outcomes is possible (US Interagency Working Group on Sustainable Development Indicators, 1998). The ecological footprint (Wackernagel & Rees, 1996) is an example of this principle, as complex calculations translate into an understandable and demonstrable geographic area.

The creators and users of cross-institutional sustainability assessment tools have a difficult task in measuring up to this lofty “ideal tool”. They must not only portray the status of the colleges or universities (as measured against the ever-evolving baseline of sustainability) but also integrate motivations, processes and outcomes into a comparable, understandable and calculable framework that moves far beyond eco-efficiency. These tools need to decipher directions and processes while stressing prioritized opportunities for change. Although no tool—and certainly no individual indicator—will capture all these attributes, the next section reviews efforts that excel at different facets of these lofty goals (Table 1).

3. Review of existing assessment tools

Perhaps because of the difficulties in developing and implementing cross-institutional assessment tools, the relatively new field of management for sustainability in higher education suffers from a lack of empirical data and assessment initiatives, as Filho (2000) and others pointed out. Herremans and Allwright (2000, p. 169) wrote, “Even though the literature provides some excellent case studies of environmental initiatives that have been implemented throughout the world, most of the information available is in the form of examples of ‘this is what we did on our campus’”. The major works in the field adhere to the trend of providing case studies and practical advice—mixed with some theory—but with little empirical crosscutting data (e.g., Eagan & Orr, 1992; Eagan & Keniry, 1998; Creighton, 1998; Keniry, 1995; Smith and The Student Environmental Action Coalition, 1993; Filho, 1999; Cortese, 1992, 1999a,b). However, eleven recent efforts—which vary greatly in scope, scale and stage—have emerged to alleviate this problem:¹

The National Wildlife Federation’s “State of the Campus Environment” (US): The most comprehensive and ambitious assessment tool to date is the National Wildlife

¹ The tools chosen for assessment are the most far-reaching and successful identified in the literature by the author and several others. However, this list is not comprehensive, as assessment tools have been omitted intentionally and unintentionally, due to lack of space and information.

Table 1
Summary of major strengths and weakness of cross-institutional sustainability assessment tools

Assessment tool	Major strengths	Major weaknesses
National Wildlife Federation's State of the Campus Environment	<ul style="list-style-type: none"> • Comprehensive • Combines eco-efficiency and sustainability • Identifies barriers, drivers, incentives and motivations • Identifies processes and current status 	<ul style="list-style-type: none"> • Little use of the term "sustainability" • Small sample within each college/university
Sustainability Assessment Questionnaire	<ul style="list-style-type: none"> • Emphasizes (cross-functional) sustainability as a process • Useful as a conversational and teaching tool • Probing questions that identify weaknesses and set goals 	<ul style="list-style-type: none"> • No mechanisms for comparisons or benchmarking • Difficult for large universities to complete
Auditing Instrument for Sustainability in Higher Education	<ul style="list-style-type: none"> • Flexible framework for institutional comparisons • Process-orientation which helps prioritize and set goals through developmental stages • Created through international consensus 	<ul style="list-style-type: none"> • Difficult to comprehend • Motivations are potentially excluded
Higher Education 21's Sustainability Indicators	<ul style="list-style-type: none"> • Process-orientation that moves beyond eco-efficiency with relatively small set of indicators • Recognizes sustainability explicitly and strategically 	<ul style="list-style-type: none"> • Difficult to measure and compare • Indicators may not represent most important issues
Environmental Workbook and Report	<ul style="list-style-type: none"> • Useful in strategic planning and prioritizing • Collects baseline data and best practices 	<ul style="list-style-type: none"> • Operational eco-efficiency and compliance focus • Difficult to aggregate and compare data • Motivations are largely ignored
Greening Campuses	<ul style="list-style-type: none"> • Comprehensive, action orientation incorporating processes • Explicitly and deeply addresses sustainability • User-friendly manual with case studies, recommendations 	<ul style="list-style-type: none"> • Calculations and comparisons difficult • Focus on Canadian community colleges • Resources out-of-date
Campus Ecology	<ul style="list-style-type: none"> • Cross-functional, practical "guide" and framework • Baseline for current tools 	<ul style="list-style-type: none"> • Environmentally focused (i.e., not sustainability) • No longer "state-of-the-art"
Environmental Performance Survey	<ul style="list-style-type: none"> • Process-oriented • Compatible with environmental management systems 	<ul style="list-style-type: none"> • Operational eco-efficiency focus • Neglect of sustainability and cross-functional initiatives
Indicators Snapshot/Guide	<ul style="list-style-type: none"> • Quick, prioritized environmental "snapshot" • Opportunity for more depth on issues of concern 	<ul style="list-style-type: none"> • Operational, eco-efficiency focus with little reference to processes, motivations, benchmarking and sustainability
Grey Pinstripes with Green Ties	<ul style="list-style-type: none"> • Model for data collection and reporting • Links programs and reputations 	<ul style="list-style-type: none"> • Not sustainability-specific • Neglects decision-making processes and operations
EMS Self-Assessment	<ul style="list-style-type: none"> • Rapid self-assessment focused on processes 	<ul style="list-style-type: none"> • Operational eco-efficiency focus

Federation's (NWF) Campus Ecology Program's "State of the Campus Environment" project (McIntosh, Cacciola, Clermont, & Keniry, 2001). NWF's far-reaching goal is to provide a "national profile of environmental performance on America's colleges and universities (National Wildlife Federation, 2001)". To this end (and after an extensive review process), NWF developed the "first-ever large-scale (campus) environmental performance survey"—funded in part by the Educational Foundation of America, co-sponsored by 14 organizations, and administered by Princeton Survey Research Associates. The survey—which is web-based in order to reduce waste without sacrificing features such as the ability to pause and save data—was sent (in December 2000) to presidents, provosts and chief facilities officers at all 4100 accredited 2- and 4-year colleges and universities in the US. The long-term goal is to conduct the survey every 2–3 years to assess national trends over time (Cacciola, 2001).

The NWF survey effectively combines measures of incremental eco-efficiency (e.g., water conservation and recycling) with more long-term, sustainable processes (e.g., faculty training in sustainability, land stewardship practices, and use of life-cycle assessment) (McIntosh et al., 2001). Moreover, the survey combines accountability for environmental performance and history of environmental initiatives with detailed issue-based questions. The survey also takes the unique step of explicitly identifying barriers, drivers, incentives and motivations for pursuing campus environmental change from a leadership perspective. The mixture of qualitative and quantitative measures ensures comparability, contextual richness and a comprehensible set of best practices. However, NWF emphasizes that the survey is not designed to rank individual campuses on sustainability, but rather to provide nationwide trends on managerial practices.

A weakness of NWF's assessment tool is the lack of explicit reference to sustainability, as the term only appears in the context of curriculum. NWF opted to use the term "management" or "environmental" instead of "sustainability" to ensure comprehension by administrators. However, since sustainability is qualitatively different from "environmental responsibility", campus leaders might attach different meanings to survey questions based on their interpretations, none of which might approach theorists' and practitioners' meaning of "sustainability". Without explicit reference to sustainability, social issues—and their interaction with environmental issues—tend to be neglected. An unavoidable weakness (given the broad scope of the survey) is that characterizing an entire campus with input from a maximum of the top three decision-makers (and, possibly, their staffs) is difficult and potentially misleading.

NWF received responses from 1116 out of 12300 individuals (9.1%) and 891 out of 4100 institutions (21.7%) (McIntosh et al., 2001). While summarizing the results of the survey is beyond the scope of this article, NWF's Campus Environmental Scorecard represents a major step forward in our knowledge of campus environmental performance and decision-making processes. This process of "grading" US campuses on environmental issues can and should be used as a foundation for future assessments.

University Leaders for a Sustainable Future's Sustainability Assessment Questionnaire: The Association of University Leaders for a Sustainable Future's (ULSF) Sustainability Assessment Questionnaire (SAQ)—which is currently being utilized at select campuses across the world—complements NWF's efforts. While NWF focuses on benchmarking, the SAQ is a largely qualitative "teaching tool" that stimulates "discus-

sion and further assessment” (ULSF, 1999). ULSF encourages institutions to use the SAQ as a group exercise—led by a ULSF staff member—with 10–15 representatives from “critical campus constituencies”. The goals of the SAQ are to offer its users “a comprehensive definition of sustainability in higher education as well as to provide a snapshot of their institutions on the path to sustainability”. The SAQ emphasizes decision-making mechanisms and processes, with responses on both a 5-point likert scale and in open-ended paragraphs.

The greatest strength of the SAQ is its clear focus on sustainability and sustainable processes. Sustainability is explicitly outlined in the cover letter and through a page of sustainability definitions placed before the survey. These definitions emphasize the social side of sustainability as well as the inherent ambiguities of moving toward and measuring sustainability as a campus. Another major strength of the SAQ is that it poses probing questions about sustainability and its integration into the campus in terms of strengths, weaknesses, goals and desires, such as “the institution’s contribution to a sustainable economy and sustainable local communities”. ULSF stresses sustainability, not eco-efficiency, in institutional operations by inquiring about source reduction, social responsibility in investing, and sustainable landscaping. In addition, the SAQ assesses crosscutting organizational structures and processes—such as integration of sustainability into incentives, rewards, staffing, and formal statements.

The major weakness of the SAQ is identified by ULSF in its cover letter for the tool (ULSF, 1999): “Since the questions are primarily qualitative and impressionistic, we cannot use the responses to rate or compare institutions”. However, the results are helping to determine the perception of sustainability in higher education. An additional potential problem is that large institutions may not be able to answer many of the questions comprehensively, such as listing courses and research efforts related to sustainability. Overall, the SAQ has been and will continue to be very successful as a discussion-generating and progress-reporting tool for campus sustainability scholars and practitioners.

Auditing Instrument for Sustainability in Higher Education: The major goals of the Dutch working group currently designing the Auditing Instrument for Sustainability in Higher Education (AISHE) include: providing criteria and a framework for internal and external sustainability audits; measuring the success in campus implementation of sustainability; and creating a mechanism to exchange experiences and motivations (Roorda, 2000, 2002). The goal is for AISHE to expand across Europe and the world, resulting in certificates, awards, and other forms of official recognition for users and the instrument itself (Roorda, 2000). The tool consists of 24 “criteria” evaluated on five developmental “stages” (activity oriented, process oriented, system oriented, chain oriented, total quality). For example, “staff development” is in the total quality stage (the highest) if “the organization policy on sustainability is based on societal and technological developments. There is systematic feedback to society” (Roorda, 2002). By evaluating and prioritizing the stage of each item (in groups of 10–15 over a 4–6 hour span), a college or university forms a matrix (24 × 5) of status and goals complete with assistance tools for advancement. AISHE focuses on process over content, qualitative over quantitative measures, and descriptive over prescriptive measures. Thus, AISHE is both an auditing method and a policy

instrument around which other sustainability tools, such as ISO 14001, can form. AISHE's process-orientation captures dynamic decisions involved in managing for sustainability. Moreover, the developmental stages encourage measurement of progress without forcing quantitative measures. Thus, AISHE provides for potential cross-institutional comparison.

A significant weakness of AISHE is that the criteria are somewhat abstract and difficult to comprehend. However, the creators of AISHE are developing assistance tools, examples, reference lists, and a training program to make the criteria more tangible and comprehensible. Moreover, AISHE does not explicitly include indicators about motivations for pursuing sustainability. In other words, it seems possible to use the tool without explicitly addressing the reasons for moving a campus in a particular direction. Overall, AISHE is an excellent example of a process-oriented approach to sustainability assessment. The consensus-building approach to designing AISHE is creating a flexible platform upon which to stimulate and operationalize sustainability in higher education. Thus, AISHE has the potential for global reach and appeal.

Higher Education 21's Sustainability Indicators (UK): The Forum for the Future's Higher Education 21 (HE 21) project helps "higher education institutions recognise the impact they have on the environment" and monitors "their success in moving toward sustainability" (HE 21, 1999). One outcome of this unique project has been a menu of sustainability indicators developed by 25 partner institutions (HE 21, 1999; Ali Khan, 1999). HE 21's framework begins with the explicit recognition of sustainability as a social, ecological and economic "process". Moreover, HE 21 adheres to the principle of parsimony, using 12 general "headline indicators" and eight "strategic management indicators". For example, an economic headline indicator is the "number of major research projects relating to sustainable development". The advantage of this approach is that HE 21 moves beyond eco-efficiency by strategically focusing on essential organizational change parameters and processes.

A major weakness of HE 21's initial efforts is that measurement and comparisons are difficult. For example, while it is useful to know whether a college or university has an "environmental management system covering all sites", this data is difficult to collect and provides little context for other campuses. Moreover, HE 21's indicators may not represent the most important concepts in higher education sustainability. For example, the "percentage of full time student recruits who are permanent local residents" is one of only three social headline indicators. Overall, HE 21's indicators project is an important tool for designing sustainability management systems. The strategic management focus, particularly in Ali Khan (1999), is useful for colleges or universities in creating sustainability policies, positions, audits, training, and goals. The effort is less useful for providing a cross-institutional framework for assessment and comparison.

Higher Education Funding Council for England's Environmental Report and Workbook: To assist "those within universities who are responsible for implementing environmental policy", the Higher Education Funding Council for England developed an environmental report (1998a) and workbook (1998b). The workbook—which includes over 130 self-assessment questions—guides colleges and universities through a legislative and environmental review. The greatest strengths of this effort are its strategic foci on: baseline data, best practices, policy, management systems (including creating

responsibility and information systems), conditions for success, and meeting (English) legal requirements. The self-assessment worksheet included in the workbook can help college or university personnel rate, plan and prioritize environmental management. However, the effort is focused on operations, and sustainability is rarely mentioned and is never used as a goal-setting target. Regulatory compliance—as opposed to moving beyond legal minimums—is stressed, as is eco-efficiency (as opposed to systemic changes). Moreover, the self-assessment format leaves little room for comparisons between institutions or aggregate measures of progress, and motivations are largely ignored.

Greening Campuses: The primary goal of “Greening Campuses” (Chernushenko, 1996) is to be “a comprehensive source of information and strategies designed as much for institutions already grappling with environmental issues as it is for those that have barely begun to do so (vi)”. *Greening Campuses* is a practical manual (which comes on a diskette) created through a partnership between the United Nations Environment Programme, the Association of Community Colleges of Canada and the International Institute for Sustainable Development. The manual begins with a call to action as well as definitions of sustainability. The sustainability orientation continues throughout the manual. A major strength of *Greening Campuses* is its comprehensive, process orientation. Each of the many topics is addressed by clearly identifying: the problem and potential solutions; common obstacles and how to avoid them; costs, benefits and opportunities; priorities for action; and best practices. Thus, *Greening Campuses* creates a systematic, holistic framework for action toward sustainability that incorporates specific, prioritized recommendations as well as examples of institutions further along the path to sustainability. Moreover, *Greening Campuses* raises profound issues about social and ecological sustainability. For example, the “Facilities Design and Construction” section recommends beginning the design process by asking the question: “Is this facility needed?” However, *Greening Campuses* fails to provide an adequate way to calculate and compare progress toward sustainability. In addition, the manual focuses on Canadian community colleges, not to the exclusion of other institutions, but enough to hamper the usefulness for other types of campuses. Moreover, many of the resources in the manual are out-of-date. Overall, *Greening Campuses* (Chernushenko, 1996) is an excellent resource for campus environmental decision-makers developing action strategies, but falls short as a measurable and comparable assessment tool.

Campus Ecology: Students and others across the US and world have used the book “*Campus Ecology*” (Smith and The Student Environmental Action Coalition, 1993) extensively to conduct environmental audits. The cross-functional and comprehensive focus was unique at the time. Although these topics are addressed largely through an eco-efficiency lens, the emergence and integration of social and economic topics into the debate can be seen through the inclusion of “environmental justice” and “investment policies”. The major strength of “*Campus Ecology*” is its practicality as a clear, coherent framework for assessment: frame the problem, design assessment questions, gather data, identify best practices, develop recommendations and strategies, and find resources for implementation. Moreover, “*Campus Ecology*” encouraged the thought about processes, life-cycle analysis and sense of place that is reflected in the more progressive current tools. Although this tool is no longer “state-of-the art”, it far

exceeded its goal of being a starting point for student environmental assessments and has become a basis for cross-institutional sustainability assessments.

Herremans and Allwright's Environmental Performance Survey (Canada and the US): To assist the University of Calgary and other institutions in implementing environmental management systems, Herremans and Allwright (2000) designed a survey to answer the question: What drives good environmental performance at North American colleges and universities? This survey was sent (1998–1999) to at least the largest two colleges or universities in each province and state as well as to Talloires Declaration² signatories. Fifty institutions (12 Canadian/38 US) completed the survey, which takes a cost-centered approach to environmental management, focusing not on quantitative data, but on four managerial “elements”: focus, commitment, capability and learning. The strengths of Herremans and Allwright’s effort come from their process-orientation, simplicity and compatibility with established environmental management systems. Moreover, this effort addresses and categorizes environmental posture and behavior in a holistic manner. However, the results are limited almost solely to operations, largely ignoring the deep cross-functional, cultural changes required for movement toward sustainability.

New Jersey (US) Higher Education Partnership for Sustainability's Campus Sustainability Selected Indicators Snapshot and Guide: The New Jersey Higher Education Partnership for Sustainability’s far-reaching mission includes (2001) “identifying specific indicators and general measures which can be used at each (New Jersey) campus for determining environmental impact and for informing alternative plans of action.” To this end, the Partnership developed its “Campus Sustainability Selected Indicators Snapshot and Guide”, which is being distributed to all New Jersey campuses with the goal of becoming a “simplified and workable” approach to sustainability assessment. For each of the 10 categories of indicators, each campus provides a “snapshot” (rating sustainability on a 1–7 scale) as well as a ranking of priorities. Campuses fill out a more detailed indicators guide for the highest priority items. The strength of the Partnership’s effort is in providing a quick, prioritized overview of environmental facets of campus operations. However, this effort is narrowly focused on eco-efficiency in operations (e.g., lighting retrofits)—devoting little attention to sustainability and cross-functional initiatives—although institutions are asked to rank the “sustainability” of these efforts. There is little reference to processes, motivations or other important decision-making parameters. Moreover, there is no way to benchmark sustainability initiatives across campuses.

World Resources Institute's "Grey Pinstripes with Green Ties" Business School Survey (US): In 1998 (Finlay, Bunch, & Neubert, 1998) the World Resources Institute (WRI) surveyed the top 67 MBA programs in the US (50 respondents) on environmental courses, institutional support and faculty research. While the results of the survey are not relevant to this article, this survey represents a model for collecting digestible curriculum and research-based campus data. The results are portrayed in “quartiles”, which allow stakeholders to assess and benchmark institutions with-

² The Talloires Declaration—created in 1990—asks colleges and universities to work individually and collaboratively toward sustainability. An institution is a “signatory” if the president signs this “pledge”.

out forcing quantitative comparisons. Moreover, WRI's assessment captures programs and reputations, and includes environmental courses as well as environmental modules in core courses. However, WRI's survey is not sustainability-specific (i.e., does not distinguish between sustainability and environmental issues), lacks information on decision-making processes, and does not include operations (nor service to a significant degree). WRI conducted a follow-up survey called "Beyond Grey Pinstripes" (Finlay and Samuelson, 1999) and continues to provide updates and surveys that are more detailed.

The Campus Consortium for Environmental Excellence's Environmental Management System Self-Assessment Checklist (US): The Campus Consortium for Environmental Excellence—which consists of US environmental safety officers—developed its Environmental Management Self-Assessment Checklist (2000) to "help campuses identify the strengths and weaknesses of its current EMS (environmental management system)". The 33-part questionnaire is technical, process-oriented, based on ISO 14001, and directed at campus environmental, health and safety professionals. The strength of this tool is as a "rapid self-assessment" which helps campuses visually focus on environmental management processes. The four-part scale for each question follows a "plan, do, check, act" framework in five major areas: policy, planning, implementation and operations, checking and corrective action, and management review. However, the checklist does not reflect sustainability, focusing on eco-efficiency in operational areas such as compliance, documentation, policies and procedures.

4. Conclusions

The 11 campus sustainability assessment tools reviewed in this article vary greatly in purpose, scope, function and state of development (see Table 1). However, these tools share important strengths and weaknesses. Many assessments excel in capturing baseline data on environmental and sustainability performance as well as process-oriented information on how campuses are beginning to manage for sustainability. These tools provide a foundation for strategic planning by identifying important issues as well as methods to set and achieve prioritized sustainability goals. However, most assessment tools do not provide mechanisms for comparing campus efforts against other institutions or national/international averages. While measuring "what" campuses are doing and "how" they are doing it, most assessments neglect "why" initiatives began and are maintained (i.e., motivations). Moreover, many tools focus on operational eco-efficiency, although theory and practice point to the need for sustainability integration across functional areas. Finally, many analysts and assessment tools do not effectively communicate methods and results, although this situation is likely to change as the tools are used more extensively.

Regardless of specific strengths and weaknesses, cross-institutional assessment tools provide valuable insight into essential attributes of sustainability in higher education through their structure and content. The tools reviewed in this article converge on the following parameters:

1. *Decreased throughput*: All assessment tools reflect the need for campuses to decrease usage of energy, water, and other materials and inputs. Tools that orient toward sustainability incorporate goals of adjusting throughput to a level equivalent with ecosystem carrying capacities.
2. *Incremental and systemic progress*: Recognizing that sustainability is a long-term and difficult goal and process, the tools reflect a two-prong approach. First, campuses should pursue incremental steps to move toward eco-efficiency (e.g., water conservation). The weaker assessment tools stop with incremental steps while the stronger tools incorporate the simultaneous second prong, systemic changes, which include incentive and reward structures, mission and goals statements, procedures, annual reports and other organizational decision-making processes.
3. *Sustainability education as a core function*: While elective courses focused specifically on sustainability are necessary and commendable, state-of-the-art assessment tools recognize that sustainability education needs to be incorporated into core curricula and courses in many disciplines. Curricula on sustainability must include active learning about the home institution as well as larger ecological and social issues. Moreover, education must move beyond the classroom to ensure student and faculty support in sustainable operations, research and service.
4. *Cross-functional reach*: Strong assessment tools measure progress on issues that incorporate teaching, research, operations and service, such as land stewardship and ecological building design. Incorporating multiple functions ensures attention to the interrelated environmental, economic and social aspects of sustainability initiatives.
5. *Cross-institutional action*: Leading institutions in sustainability and leading assessment tools reach across institutional boundaries through initiatives and cross-campus comparisons. For example, assessments of campus investments as well as outreach and employment of graduates address the crucial function that colleges and universities play in social development through promoting or hindering sustainability. Moreover, campuses help each other by sharing successes, constraints and opportunities.

Cross-institutional tools to assess sustainability in higher education are rapidly emerging. The most useful of these initiatives reflect the larger transition in thought from environmental management (eco-efficiency) to management for sustainability. Of course, assessment approaches also inevitably reflect the biases of their creators and users. The benefits (and deficiencies) of these tools will only be clear after their implementation, which is just beginning for most major efforts.

5. Issues for the future

The current state of cross-institutional assessment reveals two major issues that scholars and practitioners are beginning to address and will continue to grapple with in the near future. First, should analysts develop a “universal tool” to assess sustainability in higher education? Several assessment tools strive to become an international standard. A “universal tool” has clear benefits in terms of standardization, comparisons and min-

imization of assessment tool development efforts. However, there is no consensus over whether such an approach is necessary to gather and share knowledge. The current approach—in which countries, regions and individual campuses develop or tailor tools for their own needs—is succeeding in gathering piecemeal data. Moreover, developing a “universal tool” would be a painstaking process, which would take longer than many stakeholders are willing to wait for results. In addition, the desirability of a “universal tool” is debatable as contextually important information is likely to be overlooked. Therefore, scholars and practitioners need to carefully consider the necessity, feasibility and desirability of a “universal assessment tool”.

The second and related major issue is: Should analysts develop mechanisms to rank colleges and universities on sustainability? Rankings would provide digestible information to students, parents, administrators and other critical stakeholders on the relative position of campuses on sustainability. However, most assessment tools have shied away from rankings due to resistance from administrators and others to ordering campuses on a subjective concept and goal. There is no clear way to arrange campuses on a sustainability scale, yet lack of coherent criteria has not stopped campus rankings on other important issues. Therefore, scholars and practitioners need to either help shape a sustainability ranking system or provide a clear rationale for why ranking is not appropriate. This controversial next step in the development of cross-institutional campus sustainability assessment tools will have far reaching implications in theory and practice since it is important to the major “client” of higher education: students.

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