

ELR

NEWS & ANALYSIS

ARTICLES

Progress Toward Sustainability in Higher Education

by Wynn Calder and Richard M. Clugston

When society recognizes a need that can be satisfied through advanced education or research *and* when sufficient funds are available to pay the cost, American universities respond in exemplary fashion. . . . On the other hand, when social needs are not clearly recognized and backed by adequate financial support, higher education has often failed to respond as effectively as it might, even to some of the most important challenges facing America After a major social problem has been recognized, universities will usually continue to respond weakly unless outside support is available and the subjects involved command prestige in academic circles.¹

—former Harvard University president Derek Bok

Sustainable development remains barely recognized as a significant social, economic, or environmental challenge for the United States. The President's Council on Sustainable Development (PCSD)² was disbanded in May 1999, based in part on the perception of Vice President Albert Gore's campaign that sustainability was not an issue for the American electorate. Little funding from either governments or foundations supports higher education initiatives

Wynn Calder is associate director, Association of University Leaders for a Sustainable Future (ULSF) and the Center for Respect of Life and Environment (CRLE). He is editor of the ULSF report, *The Declaration*, news editor for the *International Journal of Sustainability in Higher Education*, and co-coordinator of the Higher Education Network for Sustainability and the Environment (HENSE). Richard Clugston is executive director, CRLE and ULSF and the Earth Charter USA Campaign. He is publisher and editor of the CRLE journal, *Earth Ethics*, and deputy editor of the *International Journal of Sustainability in Higher Education*.

[Editors' Note: In June 1992, at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, the nations of the world formally endorsed the concept of sustainable development and agreed to a plan of action for achieving it. One of those nations was the United States. In August 2002, at the World Summit on Sustainable Development, these nations gathered in Johannesburg to review progress in the 10-year period since UNCED and to identify steps that need to be taken next. Prof. John C. Dernbach has edited a book, *Stumbling Toward Sustainability*, that assesses progress made by the United States on sustainable development in the past 10 years and recommends next steps. The book, published by the Environmental Law Institute in July 2002, is comprised of chapters on various subjects by experts from around the country. This Article appears as a chapter in that book. Further information on *Stumbling Toward Sustainability* is available at www.eli.org or by calling 1-800-433-5120 or 202-939-3844.]

1. DEREK BOK, *UNIVERSITIES AND THE FUTURE OF AMERICA* 104-05 (1990).
2. The PCSD was formed in June 1993 by Executive Order to develop policy recommendations for sustainable development in the United States. It was a 25-member council consisting of 5 cabinet secretaries, chief executive officers of businesses, and executive directors of nongovernmental organizations (NGOs).

to promote sustainable development, and only a few disciplines are beginning to afford a measure of legitimacy to teaching, research, and outreach in this area. Hopeful signs are emerging, but education for sustainable development in America is still at the margins.

The seeds of the movement to green higher education in the United States go back to the emergence of environmental concerns in the late 1960s and early 1970s. The first Earth Day in 1970 was a student-based effort. Internationally, the Stockholm Declaration of 1972³ related environmental concerns to all societal sectors, including education. Only after the 1992 Rio Earth Summit⁴ did the term education for sustainable development (also "education for sustainability") enter the vocabulary of educational reformers. While the movement continues to draw on an environmental foundation, concerns have broadened to include the social and economic dimensions of sustainability.

In the United States, higher education for sustainable development (HESD) has been given impetus over the years primarily by a small number of champions from the academy, nongovernmental organizations (NGOs) and business communities, and to a minor degree from government. In other countries (notably European, but in some developing countries as well) sustainability in higher education is supported by governments and has made deeper inroads in the disciplines and professions.⁵ Some colleges and universities in the United States are actively pursuing an authentic commitment to sustainability, yet there is little consensus as to what the end goal looks like. Sustainable development, when deeply embraced by higher education institutions, means essentially that these values are reflected in each of the core areas of university life: research, teaching, outreach, and operations.

While teaching and scholarship must begin to reflect these issues, so that students learn how to think in a more integrative fashion, there is an emerging consensus that institutions must also model sustainable practices. It is important that academics keep experimenting with, and sharing, their efforts to embody sustainability, especially in making it a focus of their disciplines and professions. But it is even

3. Declaration of the United Nations (U.N.) Conference on the Human Environment, June 16, 1972, reprinted in 11 I.L.M. 1416 [hereinafter Stockholm Declaration].
4. Declaration on Environment and Development of the U.N. Conference on Environment and Development, June 14, 1992, reprinted in 31 I.L.M. 874 [hereinafter Rio Declaration].
5. See Walter L. Filho, *Sustainability and University Life: Some European Perspectives*, in 5 SUSTAINABILITY AND UNIVERSITY LIFE (Walter L. Filho ed., 1999).

more critical that major stakeholders, such as the business community and funders (foundations and governments) support sustainability in higher education.

It may well be that the United States—obsessed with increasing consumption and economic growth—will not take the lead in this societal transformation. While there are increasing indications that higher education is moving toward a commitment to sustainability, there are also powerful societal forces at work against this progress. This Article will examine the roots of the HESD movement in the United States and reflect on its progress and possibilities.

History and Definitions of HESD

Since the United Nations (U.N.) Stockholm Conference on the Human Environment in 1972, there has been growing international interest in the role of higher education in fostering a sustainable future. Agenda 21⁶ and a series of HESD declarations in the 1990s made this agenda explicit. This section looks at the influence of international documents as well as U.S. reports and conferences in shaping and defining what sustainability in higher education means. It then describes a model sustainable institution that embodies sustainability in every aspect of its teaching and practice.

The relationship between education and sustainable development was first recognized on an international level at the 1972 Stockholm Conference on the Human Environment. Principle 19 of the Stockholm Declaration calls for environmental education from grade school to adulthood to “broaden the basis for enlightened opinions and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension.”⁷ In 1977, the Intergovernmental Conference on Environmental Education in Tbilisi⁸ produced the first international declaration on environmental education.⁹ The Tbilisi Declaration promoted environmental teaching, research, and training, as well as technical and vocational education. It also recognized the essential interdisciplinary nature of environmental education:

Environmental education . . . is necessary for students in all fields, not only natural and technical sciences, but also social sciences and arts, because the relationship between nature, technology and society mark and determine the development of a society.¹⁰

During the Reagan Administration, concern for the environment diminished in the United States generally, and in higher education as well. However, various environmental

crises in the late 1980s, the call of the Brundtland Report,¹¹ and especially preparations for the Rio Summit, gave new international attention to the issue of education for sustainability and the environment in the early 1990s. The term “education for sustainable development” emerged primarily out of the Rio Summit and for many educators is defined more broadly than “environmental education” to include issues of international development, cultural diversity, and social and environmental equity.¹² The authors of this Article use the term “higher education for sustainable development” both for its broader implications and for its explicit reference to the goals of the Earth Summit.

Agenda 21 and Subsequent International Conferences

Aside from the word “government,” “education” appears more often than any other term in Agenda 21. Education underlies and has the potential to reinforce every other priority in this extensive blueprint for a sustainable world. Agenda 21 (and the Rio Declaration)¹³ calls for integrated decisionmaking based on integrated information to enable individuals, organizations, institutions, businesses, and governments to incorporate environmental considerations and goals into social, economic (and even security) decisions. Since higher education to date largely fails to expose students to issues and considerations outside of the narrow confines of their disciplines, it consequently fails to produce integrated decisionmakers.¹⁴ Thus HESD primarily involves teaching students to understand ecological, social, and economic problems through the many lenses of an interdisciplinary framework. It assumes that integrated decisionmaking is not possible without integrated thinking. How universities effectively and rigorously teach integrated thinking, without becoming soft and watering down the disciplines, is a major intellectual challenge. It is also a profound necessity if we are to create a healthy and sustainable world for future generations.

Chapter 36 of Agenda 21, on “Education, Training, and Public Awareness,” states that “education is critical for pro-

6. U.N. Conference on Environment and Development, Agenda 21, U.N. Doc. A/CONF.151.26 (1992) [hereinafter Agenda 21].

7. Stockholm Declaration, *supra* note 3. While the Stockholm Declaration is somewhat anthropocentric, making little reference to the rights of nature, it is one of the first international documents to recognize the fundamental interdependency between humanity and the environment. See Tarah Wright, *A Review of Definitions and Frameworks for Sustainability in Higher Education*, HIGHER EDUC. POL’Y/INT’L J. SUSTAINABILITY IN HIGHER EDUC., July 2002.

8. Tbilisi was then capital of the Georgian Soviet Socialist Republic.

9. Sponsored by the U.N. Educational, Scientific, and Cultural Organization (UNESCO) and the U.N. Environment Program (UNEP), this conference marked the beginning of environmental education initiatives on an international governmental level. See Wright, *supra* note 7.

10. UNESCO-UNEP (1977).

11. The most frequently cited definition of sustainability came from the report of the World Commission on Environment and Development (WCED), chaired by Gro Harlem Brundtland, then prime minister of Norway. Sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” WCED, *OUR COMMON FUTURE* (1987).

12. The concept of environmental education (EE), as expressed at the Tbilisi conference, embraced a comprehensive view of the environment. Controversy over differences between EE and education for sustainable development (ESD)—or “education for sustainability”—ensued when the latter term came into use in the early 1990s. Some suggest that environmental education is part of education for sustainable development while others assert the opposite. Participants in a 1999 international online debate on ESD explored the implications of a new theoretical and practical definition of EE. Most participants regarded “ESD as the next generation of EE, which includes issues of ethics, equity and new ways of thinking and learning.” Many saw ESD as “more future-oriented, critical of the predominant market and consumption driven society . . . and preoccupied with linking social, economic and environmental equity at the local, regional and global level.” For more information on the online EE/ESD debate, see Arjen E.J. Wals, *ESDebate: Online Discussion of Education for Sustainable Development (ESD)*, GLOBAL F. FOR ENVTL. EDUC. (2000), available at <http://ccaretakers.boker.org.il/gldebate.htm> (last visited Mar. 30, 2002).

13. See *supra* note 4.

14. *Argued in* DAVID W. ORR, *ECOLOGICAL LITERACY: EDUCATION AND THE TRANSITION TO A POSTMODERN WORLD* (1992).

moting sustainable development and improving the capacity of the people to address environment and development issues.”¹⁵ The chapter makes brief but specific reference to universities¹⁶ and their role in building a sustainable future. Directly pertinent to sustainability in higher education are the following statements:

Countries must “broaden the means and scope of education” to support sustainable development.¹⁷

“Governments should strive to . . . prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels.”¹⁸

Countries must support “cross-disciplinary courses” for all students, “regional networks and activities and national university actions which promote research and common teaching approaches on sustainable development,” and “new partnerships . . . with business and other independent sectors.”¹⁹

Countries should encourage universities “to contribute more to awareness building . . . for all audiences.”²⁰

These sections of Chapter 36 touch on most of the major priorities of HESD today: cross-disciplinary curriculum development on sustainable development; scientific and other sustainability-related research; outreach and multi-stakeholder network formation promoting environmental awareness and sustainability.²¹

Since 1996, the U.N. Commission on Sustainable Development (UNCSD)²² and the U.N. Educational, Scientific, and Cultural Organization (UNESCO), the task manager for Chapter 36, have promoted HESD in various official documents and conferences. An International Work Programme on Education, Public Awareness, and Training for Sustainability (Work Programme) was initiated at the fourth session of the UNCSD in 1996, in order to give added impetus and visibility to the themes of Chapter 36. The Work Programme was further elaborated at the sixth session of the UNCSD in 1998, which stressed for higher education the reorientation of formal educational systems and interdisciplinary approaches to teaching and research.²³

The UNCSD’s Work Programme also recommended, at the World Conference on Higher Education (WCHE) in October 1998, that due consideration be given to how the reform of higher education might support sustainable development. Hosted by UNESCO, the WCHE concluded with the adoption of the World Declaration on Higher Education for the Twenty-First Century: Vision and Action. Though the term “sustainable development” does not appear often in this ambitious 13-page document, it proclaims education to be the “fundamental pillar of human rights, democracy, sustainable development and peace.”²⁴ In the first sentence of Article 1, the declaration affirms that “the core missions and values of higher education, in particular the mission to contribute to the sustainable development and improvement of society as a whole, should be preserved, reinforced and further expanded.”²⁵ While these statements are general in nature, they unequivocally declare sustainable development to be the moral duty of higher education.²⁶

The UNCSD and UNESCO have consistently emphasized an interdisciplinary approach to teaching and learning in higher education, the reorientation of teacher education to reflect this priority, and networking between universities to share information and promote best practices. Outside of the U.N. process, major efforts to influence and articulate what Chapter 36 of Agenda 21 implied for higher education occurred through the development of a set of declarations and conferences throughout the 1990s.

International HESD Declarations

Starting in 1990, university representatives convened several conferences around the world and produced a series of internationally recognized declarations focused on HESD and calling their institutions to action. Of the six major declarations, only the Talloires Declaration has been popular in the United States. They are all remarkably similar in nature, reflecting an international consensus on priorities for the reform of higher education.

The first attempt by university leaders to define and promote sustainability in higher education was made in October 1990 with the creation of the Talloires Declaration. Jean

15. Agenda 21, *supra* note 6.

16. “Universities,” when used singly, will always refer to both colleges and universities.

17. Agenda 21, *supra* note 6, ¶ 36.5(a).

18. *Id.* ¶ 36.5(b).

19. *Id.* ¶ 36.5(i).

20. *Id.* ¶ 36.10(d). Chapters 31 (Science and Technology) and 35 (Science for Sustainable Development) make very clear that scientific knowledge is of paramount importance in the pursuit of sustainable development. For more discussion of Agenda 21 implications for higher education through science, see Gerd Michelsen, *Sustainable Development as a Challenge for Universities*, in 8 COMMUNICATING SUSTAINABILITY 69 (Walter L. Filho ed., 2000).

21. Notably, there is no reference in Chapter 36 to sustainable campus operations, i.e., energy and water conservation, recycling, etc., where most progress has been made in the United States. This is a major component of HESD in the Europe and the United States.

22. The UNCSD was created in December 1992, to ensure effective followup of the UNCED and to monitor and report on implementation of the Earth Summit agreements at the local, national, regional, and international levels.

23. See REPORT OF THE SECRETARY-GENERAL, COMMISSION ON SUSTAINABLE DEVELOPMENT, EIGHTH SESSION, IMPLEMENTATION OF

THE WORK PROGRAMME ON EDUCATION, PUBLIC AWARENESS, AND TRAINING, APRIL 24-MAY 5, 2000 (2000), available at <http://www.un.org/documents/ecosoc/cn17/2000/ecn172000-8.htm> (last visited Mar. 30, 2002).

24. World Declaration on Higher Education for the Twenty-First Century: Vision and Action, World Conference on Higher Education, Paris, adopted Oct. 9, 1998, preamble. For the full text, see <http://www.unesco.org/education/wche/declaration.shtml> (last visited Mar. 30, 2002).

25. *Id.* art. 1.

26. The theme of sustainable development was taken up at a special WCHE half-day session, which put forward concrete proposals for future action. Many of these ideas are reflected in the action plan of the Global Higher Education for Sustainability Partnership (GHESP), which officially formed in December 2000 to further the implementation of Chapter 36 of Agenda 21 as well as the UNCSD work program, and to follow up the recommendations of the WCHE. This partnership includes the COPERNICUS Programme of the Association of European Universities (CRE), the International Association of Universities (IAU), the Association of University Leaders for a Sustainable Future (ULSF), and UNESCO. The GHESP action plan includes developing resources for institutional reform and creating Regional Centers of Excellence to accelerate the transition toward sustainability in higher education. See the GHESP Memorandum of Understanding, at http://www.ulsf.org/resources_ghesp.html (last visited Mar. 30, 2002).

Mayer, the president of Tufts University, hosted 22 presidents, vice chancellors, and rectors from universities around the world at a conference in Talloires, France, to discuss the role of universities in shaping a sustainable future and to provide input for the Earth Summit.²⁷ Recognizing the shortage of specialists in environmental management and related fields, as well as the lack of comprehension by professionals in all fields of their effect on the environment and public health, the participants defined the role of the university in the following way: "Universities educate most of the people who develop and manage society's institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future."²⁸ The Talloires Declaration was adopted at the conclusion of the conference and signed by all present.

The Talloires Declaration is a 10-point voluntary action plan for building a sustainable university. The following two actions illustrate the level of commitment expected in teaching and research:

Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward a sustainable future.

Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and responsible citizens.²⁹

Here the critical issue of integrated thinking in research, teaching, and policy formation is stressed: "environmentally literate and responsible citizens" are presumably prepared for integrated decisionmaking in the real world. The Talloires Declaration also encourages faculty development for teaching environmental literacy; resource conservation and waste reduction on campus in order to model right behavior; the support of government, foundations, industry and NGOs; and building partnerships with primary and secondary schools.

Of the various international HESD declarations, the Talloires Declaration is the only one signed by a significant number of U.S. college and university presidents. As of September 2001, over 280 university presidents and chancellors at institutions in over 40 countries had signed the declaration. U.S. signatories numbered 73.

Other official declarations from university leaders and organizations around the world followed the Talloires Declaration and contributed to an international consensus on HESD.³⁰ The themes, which nearly all international declara-

tions share, include promoting sustainability in all relevant disciplines; research on sustainable development issues; the "greening" of university operations; engaging in inter-university cooperation; forming partnerships with government, NGOs and industry; and most consistently, the moral obligation of higher education to work for a sustainable future.³¹ All of the priorities in Chapter 36 of Agenda 21 are reaffirmed in these declarations.

Significant U.S. Statements on HESD

Two conferences in the United States in the mid-1990s helped set a tone for responding to the challenge of sustainability in higher education. Each produced a report that further clarified the movement's direction for a small but enthusiastic following. Two other significant reports emerged in 1996, which reinforced and expanded on existing recommendations.

In February 1994, Yale University hosted a major national conference, the Campus Earth Summit, which attracted over 400 faculty, staff, and student participants from 22 countries and all 50 U.S. states. The resulting document, *Blueprint for a Green Campus*, set a standard for how to think about greening the campus in America. *Blueprint for a Green Campus* recommends incorporating environmental learning into all relevant disciplines; making the campus a model of environmental behavior through waste reduction, energy efficiency, and sustainable design; instituting environmentally responsible purchasing policies; and supporting students seeking environmentally responsible careers.³² The emphases on purchasing and careers, in particular, recognized the importance of working with external stakeholders, whether as suppliers of sustainable products for the institution or as environmental leaders and alumni from business, government, media, and other sectors.

In February 1995, a "Workshop on the Principles of Sustainability in Higher Education" was held in Essex, Massachusetts. Thirty-two educators and professionals

TURE: PROCEEDINGS OF THE CONFERENCE ON UNIVERSITY ACTION FOR SUSTAINABLE DEVELOPMENT (1992). The Swansea Declaration (August 1993), of the Association of Commonwealth Universities, stressed the recognition of the "mutual vulnerability of all societies, developed and developing," and the need for people to work together cooperatively. UNESCO, SWANSEA DECLARATION (1993). The Copernicus University Charter (fall 1993), also meant for institutional endorsement, made reference to the Talloires Declaration, the Halifax Declaration, and the Rio Earth Summit, and stressed environmental literacy for students, faculty and staff, public outreach, and "interdisciplinary networks of environmental experts at the local, national, regional and international levels." CONFERENCE OF EUROPEAN RECTORS (CRE)-COPERNICUS, CRE-COPERNICUS SECRETARIAT, CRE-COPERNICUS CHARTER (1993). The Kyoto Declaration (November 1993), stressed the ethical obligation of universities to reform and recommended specific institutional plans of action. IAU, KYOTO DECLARATION (1993). The Thessaloniki Declaration (1997), which resulted from the most recent international conference on ESD ("Environment and Society: Education and Public Awareness for Sustainability," organized jointly by UNESCO and the government of Greece), makes the fundamental assertion that poverty reduction is a condition for sustainability, and affirms that the reorientation of education requires that all disciplines address sustainable development and that this requires "a holistic, interdisciplinary approach" UNESCO, THESSALONIKI DECLARATION (1997). See Wright, *supra* note 7.

27. The conference was organized by Tufts University and hosted at the Tufts European Center.

28. ULSF, REPORT AND DECLARATION OF THE PRESIDENTS' CONFERENCE (1990), available at <http://www.ulsf.org> (last visited Mar. 30, 2002) [hereinafter PRESIDENTS' CONFERENCE].

29. ULSF, TALLOIRES DECLARATION (1990), available at <http://www.ulsf.org> (last visited Mar. 30, 2002) [hereinafter TALLOIRES DECLARATION].

30. Other prominent international HESD declarations include: The Halifax Declaration (December 1991), like the Talloires Declaration, was meant for institutional endorsement and emphasized teaching and practicing sustainable development; it included an action plan outlining short-term and long-term goals for Canadian universities. LESTER PEARSON INST. FOR INT'L DEV., CREATING A COMMON FU-

31. TALLOIRES DECLARATION, *supra* note 29, art. 12.

32. See BLUEPRINT FOR A GREEN CAMPUS: THE CAMPUS EARTH SUMMIT INITIATIVES FOR HIGHER EDUCATION, A PROJECT OF THE HEINZ FAMILY FOUNDATION (1995) [hereinafter BLUEPRINT FOR A GREEN CAMPUS].

with environmental expertise gathered to discuss the role of higher education in achieving a sustainable society, the problems with current education, and strategies for change building on those contained in the Talloires Declaration.³³ The resulting *Essex Report* provides a succinct and comprehensive U.S.-based expression of what fully implementing Chapter 36 for higher education would mean. It emphasizes the importance of new pedagogical approaches, including systems thinking; exposure to issues of equity and justice; and optimal strategies such as interdisciplinary learning and hands-on activities. It also discusses strategies for change, which include actions by universities, and more significantly, actions by stakeholders in higher education.³⁴ The *Essex Report* is unique in that it goes beyond *Blueprint for a Green Campus* and many of the international declarations to embrace a more comprehensive vision of sustainability in its social, economic, and environmental dimensions.

In 1996, the Nathan Cummings Foundation commissioned *The Class of 2000 Report: Environmental Education, Practices, and Activism on Campus*, which reflected both the foundation's deep commitment to these issues and some of the dominant themes of the movement. The report recommends that higher education leaders and stakeholders (1) expand environmental education at colleges and universities, (2) improve campus environmental practices, and (3) strengthen student environmental activism. These recommendations are very similar to Yale's *Blueprint for a Green Campus*, though *The Class of 2000 Report* puts special emphasis on student activism beyond the campus.³⁵

Also in 1996, the PCSD produced an ambitious report entitled *Education for Sustainability: An Agenda for Action*, which presents a series of initiatives and recommendations for all education based on the core themes of lifelong learning within formal and nonformal educational settings; interdisciplinary approaches; systems thinking; partnerships between educational institutions and the broader community; and multicultural perspectives. This document, the result of extensive research and collaboration among hundreds of representatives from the education, business, governmental and non-profit sectors, certainly did not change the face of education in the United States. Yet it remains a significant federally sponsored document on the actions and policies needed to educate America for sustainability.³⁶

A Model Sustainable Institution

Agenda 21, the various international and national conferences,³⁷ and the numerous reports and declarations they pro-

duced reflect the analysis and concerns of many constituencies in different regions of the world over the last nine years. Their understandings of the agenda for higher education to support sustainable development are remarkably similar, and they point toward a basic framework for seeing sustainability in practice. Some of these reports recognize that colleges and universities will not change without significant outside pressure—Bok's social consensus, significant (government) funding, and disciplinary prestige. Furthermore, they agree, with only few exceptions, upon a very similar ideal type of college or university, which transforms its research, teaching, outreach, and operations to support sustainable development.

While the manner in which academic institutions define and approach sustainability is very divergent, reflecting cultural, bioregional, economic, and political diversity, we would expect a genuine commitment to creating a sustainable future to be evidenced in most of the following critical dimensions of institutional life:

Disciplinary, professional, liberal arts, and general education requirements at the university would focus on interdisciplinary decisionmaking and reflect a fundamental concern for sustainability. The institution would impart a basic understanding of (1) the complex environmental, social, and ethical issues that must be addressed to create a sustainable future, and (2) the nature of the political, organizational, and individual responses needed—particularly emphasizing the interconnected, multisectoral response that Agenda 21 expresses.³⁸ Thus courses throughout the curriculum would feature sustainability topics, e.g., globalization and sustainable development; urban ecology and social justice; population, women, and development; sustainable production and consumption; and many others. Students would also learn about how their own campus functions in the ecosystem, e.g., its sources of food, water and energy, and the endpoint of waste.

The research of the institution would significantly focus on sustainable development, e.g., renewable energy, sustainable building design, ecological economics, population and development, environmental justice, etc.

Faculty and staff development and rewards at the institution would cultivate understanding of sustainable development and criteria for hiring, tenure, and promotion would recognize faculty contributions to sustainability in scholarship, teaching, or campus and community activities.

workshops, and Ball State publishes all papers in a *Conference Proceedings* volume, now part of the literature of the field. The latest volume included papers on "Values and Ethics" and "Political Aspects of Campus Greening." See BALL STATE UNIVERSITY, CONFERENCE PROCEEDINGS: GREENING OF THE CAMPUS IV: MOVING TO THE MAINSTREAM (Robert J. Koester ed., 2001) [hereinafter GREENING OF THE CAMPUS IV].

33. The event was sponsored by Second Nature and the ULSF (two non-profit organizations promoting sustainability in higher education) and held under the auspices of the PCSD.

34. SECOND NATURE & ULSF, WORKSHOP ON THE PRINCIPLES OF SUSTAINABILITY IN HIGHER EDUCATION, ESSEX REPORT (1995) [hereinafter ESSEX REPORT].

35. See B.H. STRAUSS, THE CLASS OF 2000 REPORT: ENVIRONMENTAL EDUCATION, PRACTICES, AND ACTIVISM ON CAMPUS 17 (Nathan Cummings Foundation 1996), available at <http://www.secondnature.org/ncf2000> (last visited Mar. 30, 2002) [hereinafter CLASS OF 2000 REPORT].

36. See PCSD, EDUCATION FOR SUSTAINABILITY: AN AGENDA FOR ACTION (1996).

37. Also of note are the Ball State University "Greening of the Campus" conferences, which have been held in 1996, 1997, 1999, and 2001. These gatherings of over 200 participants have become the premier U.S. campus greening events. They involve paper presentations and

38. An attention to issues of social justice would also be present. In the words of theologian John Cobb Jr., an academic institution committed to sustainability should help students understand the roots of today's injustices and motivate them to seek justice in full integration with understanding the roots of environmental degradation and modeling environmentally sustainable practices. John B. Cobb Jr., Notes From "Sustainability and the Liberal Arts" Conference, Conway, Ark. (Oct. 1998).

Campus operations at the college or university would be fundamentally oriented toward reducing the institution's "ecological footprint."³⁹ Thus one would see examples of water and energy conservation, carbon dioxide reduction practices, sustainable building construction and renovation, environmentally responsible purchasing of food, paper, and other products, etc. Furthermore, these operational practices would be integrated into the educational and scholarly activities of the school.

Student opportunities and engagement on campus would reflect a deep commitment to sustainability through such institutional practices as new student orientation, scholarships, internships and job placement counseling related to community service, sustainability, and/or justice issues. Students groups and activities focused on environmental or sustainability issues would be visibly present.

The institution's outreach and service would support local, regional, and global partnerships to enhance sustainability, e.g., collaborating with other higher education institutions, with local primary and secondary schools and with businesses to foster sustainable practices, as well as seeking international cooperation in solving global environmental justice and sustainability challenges through conferences and student/faculty exchanges.

The university's mission, structure, and planning would communicate and promote sustainability. The descriptions of learning objectives and the public relations materials of the various schools, departments, programs, or offices would express prominent and explicit concern for sustainability. That commitment would be further evidenced through administrative positions and committees, e.g., director of environmental programs, sustainability task force, etc., and practices, e.g., orientation programs, socially responsible investment policies, annual environmental audits, etc.⁴⁰

Activities in these seven dimensions are largely supported by the reports and declarations discussed in this section. The first and second dimensions, on teaching, learning, and research, are supported by Agenda 21, the UNCSD Work Programme, and the international declarations, as well as *Blueprint for a Green Campus* and the *Essex Report*. Transformation in faculty development and campus operations, though not explicitly noted in Agenda 21, is supported in virtually every other report and declaration. Only student engagement is left out of the international documents and recommendations, while given special attention in *Blueprint for a Green Campus* and *The Class of 2000 Report*.⁴¹ Higher education outreach and partnerships for sustaina-

bility are stressed in nearly all reports and declarations, and an emphasis on the university mission shows up forcefully in the World Declaration on Higher Education, as well as the international declarations requiring presidential endorsement (Talloires, Copernicus, and Halifax). Overall, there is quite clear consensus on the comprehensive actions higher education must take if it is to embrace sustainable development.

Why is it important for higher education in the United States to pursue sustainability in these dimensions? First, as nearly every international HESD declaration claims, it is important from a moral perspective. Since colleges and universities educate and train our future community and business leaders, teachers, and policymakers, these institutions bear a moral responsibility to provide the expertise and vision needed to foster a sustainable future.⁴² Second, universities should pursue this course from a practical perspective: they are uniquely equipped to help solve the challenge of sustainability through innovation in teaching and learning. Sustainable development is not just another category of environmental, social, and economic problems we face; it is also a way of thinking about these issues. If we do not learn to think about global environmental degradation and poverty in a more effective way, we will continue to make little progress in reducing them. Part of the intellectual challenge of sustainable development, therefore, is that we must learn how to solve several problems at once. Universities can give students and future leaders the intellectual tools for doing that. Third, a U.S. commitment to HESD matters because U.S. colleges and universities influence the standards for higher education throughout the world. They also serve a larger international student body than in any other country. It is incumbent upon American higher education to contribute to solving the global challenge of sustainable development.

Assessing Developments in the United States

Since the late 1960s, academic concern, as well as student, foundation and government interest, has ebbed and flowed for environmental protection, social justice, and the reorientation of economics and social policy to serve these ends. Commitment of entering freshmen to pursuing environmental or sustainability-related goals versus pursuing short-term gain has vacillated.⁴³ Concern for the environment was

39. The "ecological footprint" measures human impact on nature. It indicates how much productive land and water we use to produce all the resources we consume and to take in all the waste we make. This concept, now a popular measure of sustainability, was developed by Mathis Wackernagel, who has written widely on the question of embracing limits and developing indicators to assess sustainability.

40. These dimensions are explored in more detail in ULSF's "Sustainability Assessment Questionnaire." See http://www.ulsf.org/programs_saq.html (last visited Mar. 30, 2002).

41. See *supra* note 35.

42. PRESIDENTS' CONFERENCE, *supra* note 28. Furthermore, academic freedom, tax-free status, and public resources are granted American educational institutions in exchange for the dissemination of knowledge and values to ensure the health and well-being of society. See *ESSEX REPORT*, *supra* note 34, at 5. See also ANTHONY D. CORTESE, *EDUCATION FOR SUSTAINABILITY: THE UNIVERSITY AS A MODEL OF SUSTAINABILITY* (1999), available at <http://www.secondnature.org> (last visited Mar. 30, 2002). See also ANTHONY D. CORTESE, *EDUCATION FOR SUSTAINABILITY: THE NEED FOR A NEW HUMAN PERSPECTIVE* (1999), available at <http://www.secondnature.org> (last visited Mar. 30, 2002).

43. This assertion is backed by data from the Higher Education Research Institute, which looks at freshman trends. See <http://www.gseis.ucla.edu/heri/cirp.htm> (last visited Mar. 30, 2002). A 2000 survey of "non-activist" college students in the United States by the Institute for Global Ethics, entitled *Reaching Out: Broadening College-Student Constituencies for Environmental Protection*, looked at the relationship between core values and concerns about the environment, as well as attitudes toward taking action for the environment. See <http://www.globalethics.org/edu/reachout.html> (last visited Mar. 30, 2002).

strong in the early 1970s, almost absent in the 1980s, and returned in the 1990s. Since there is little quantitative data allowing us to compare the state of HESD in 1992 with that of 2002, we must rely primarily on case studies and qualitative analysis of progress over the past decade.

What has happened since the Rio Earth Summit and Agenda 21? Education for sustainable development has been underfunded and undersupported, both within and outside of the academy. Tensions have arisen between environmental educators and sustainability educators and no consensus has been reached on who or what institutions should guide the HESD movement.⁴⁴ National governments have shown little interest in pursuing this agenda, especially in the United States.⁴⁵ For the most part, pressure on universities and colleges to begin to embrace the challenge of sustainable development has originated from within.⁴⁶ At a small minority of institutions across the United States, highly motivated and committed presidents, faculty members, staff members, and students have affected change in very significant ways. At a larger minority, there is evidence of increasing eco-efficiency in operations or new offerings in environmental studies, but an authentic institutional commitment to sustainable development is rare.⁴⁷

Despite the lack of transformative progress, colleges and universities in America are increasingly adopting sustainability initiatives in one or more of the seven critical dimensions of institutional life described above.⁴⁸ Innovative curricular reform for sustainability is on the rise. More research is being devoted to sustainability in the sciences, and to a lesser extent the social sciences and humanities. Some colleges and universities are modeling sustainable behavior through their purchasing, building design, and energy use. A few institutions have altered their mission statements to reflect the broader vision of a sustainable future.

Particularly promising is the recent emergence of regional university partnerships and consortia, illustrating a deeper level of commitment among and between institutions, as well as recognition that such partnerships can attract funding and affect policy.

Proceeding through each dimension, we will highlight some of the best practices of pioneering institutions and assess progress.⁴⁹ In many cases, these critical dimensions overlap: a student's coursework may include an internship that brings her into the surrounding community to address sustainable development, thus involving the curriculum, student engagement, and outreach dimensions simultaneously. To provide a clear illustration of our framework, however, we will cover each dimension separately. We will also highlight recent support for HESD from state governments and higher education associations, as well as address emerging links between the disciplines and the professions.

Curriculum

At universities and colleges across the country, increasing numbers of courses that incorporate sustainability are being developed in a range of disciplines.⁵⁰ Various efforts are also underway to transform academic programs to foster interdisciplinary thinking. This is occurring despite some confusion and much debate about what sustainability means and to what extent it is relevant within the various disciplines.

Research on curriculum development at undergraduate institutions reveals several trends. It was estimated, in 1995, that about 400 colleges and universities offered degrees in environmental studies or environmental science (out of approximately 3,700 higher education institutions).⁵¹ A 2001 national survey of environmental performance in higher education by the National Wildlife Federation (NWF) Campus Ecology Program indicates considerable progress with 43% of U.S. institutions surveyed offering a major or minor in

44. Foundation support to universities for sustainability initiatives or to NGOs promoting sustainability in higher education has been modest over the years compared, for example, with support for "environmental education" at the primary and secondary levels. See CLASS OF 2000 REPORT, *supra* note 35, at 9.

45. See the subsection *Support From Government, NGOs, and Higher Education Associations*, hereinbelow. For a brief commentary on international progress over the last 10 years, see Mary Padon, *Education for Sustainable Development: Small Is Bountiful*, HUMAN NATURE (Environmental Education and Communication (GreenCOM) Project Dec. 2000).

46. There are just over 4,100 accredited colleges and universities in the United States today: approximately 58% private, 42% public, 57% four-year, and 43% two-year.

47. Public and private, four-year and two-year, large and small institutions are implementing changes in this direction, but there is some evidence of differences between these groups. For example, a 2001 survey of higher education institutions in the United States shows that in virtually every category four-year institutions outperform two-year ones in terms of commitment to sustainability and the environment. See NATIONAL WILDLIFE FEDERATION'S (NWF'S) CAMPUS ECOLOGY PROGRAM, STATE OF THE CAMPUS ENVIRONMENT: A NATIONAL REPORT CARD ON ENVIRONMENTAL PERFORMANCE AND SUSTAINABILITY IN HIGHER EDUCATION 4 (2001) [hereinafter STATE OF THE CAMPUS ENVIRONMENT]. See *infra* note 52 for a description of the survey. In another survey, Robert Taylor conducted a content analysis of 390 randomly selected U.S. university websites and found that the most environmentally committed universities appeared to be large, public, northeastern schools. See Robert W. Taylor, *Environmental Sustainability in Higher Education: A Survey Analysis*, THE DECLARATION, Sept. 1999, at 14. See also *infra* note 67.

48. NWF's survey shows that more than one-half of "campus environmental initiatives" were started within the previous five years. See STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 24.

49. For lack of space, we will fail to mention numerous colleges and universities engaged in important efforts in HESD. While we believe that many of the examples referenced here stand out, they are primarily illustrative.

50. Second Nature, a nonprofit organization that promotes the transformation to sustainability in higher and secondary education, supports a website with over 500 course syllabi and projects pertaining to sustainability. See http://www.secondnature.org/resource_center/resource_center_courses.html (last visited Mar. 30, 2002). See also GREENING THE COLLEGE CURRICULUM (Jonathan Collett & Stephen Karakashian eds., 1996), for thoughtful essays on incorporating sustainability into the major disciplines; C.A. BOWERS, EDUCATING FOR AN ECOLOGICALLY SUSTAINABLE FUTURE (1995).

51. DOUGLAS O'REILLY ET AL., ENVIRONMENTAL STUDIES: 2000 (Environmental Careers Org. 1995).

52. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 13. The survey also found that private colleges are four times as likely as public colleges to require most students to take a course on the environment. *Id.* at 15. This was a web-based survey, distributed in three separate modules to presidents, provosts, and chiefs of facilities or plant operations at over 3,900 colleges and universities. Questions covered the following topics: goals and policies, curriculum integration, environmental literacy, transportation, energy use and conservation, purchasing, and recycling. There were a total of 1,116 responses from 471 presidents (or executive officers), 320 provosts (or academic officers), and 325 chief of facilities. A total of 891 institutions responded (majority public and four-year). Data was collected from 1 respondent at 689 schools; 2 respondents at 183 schools; and all 3 respondents from 19 schools. See <http://www.nwf.org/campusecology/stateofthecampusenvironment/index.html> (last visited Mar. 30, 2002). A 2002 review of the NWF survey identifies three shortcomings: concerns about the sample's statistical significance (see *supra* note 46); potential overestimation of progress; and

environmental or sustainability studies.⁵² For the most part, however, these programs are based in biology and chemistry departments and do not teach sustainable development; nor do they make integrated thinking and decision making an integral part of their approach.

Eight percent of those schools surveyed in NWF's study actually require all students to take an environmental studies course.⁵³ Florida Gulf Coast University, however, goes further. Founded in 1997, the university states in its mission a commitment to ecologically literate citizenry and requires of all students for graduation a course entitled "The University Colloquium: A Sustainable Future."⁵⁴ In 1997, Oakland Community College, which serves 24,000 students in Oakland County outside of Detroit, established a core general education requirement including one course with an in-depth focus on global environmental awareness and one course with a focus on social responsibility.⁵⁵ A 1995 Minnesota initiative required all state school students to take at least one "environmental theme" course.⁵⁶ Despite the relatively small number of schools requiring such courses on environmental or sustainability issues, NWF's study indicates that in 45% of universities surveyed a majority of students take at least one course concerning environmental issues.⁵⁷ Thus, while the vast majority of colleges and universities have not made sustainability a priority in the curriculum, increasing numbers are requiring or promoting this area of study in the curriculum.

Other innovative approaches to moving beyond narrow departmental and disciplinary boundaries deserve mention. College of the Atlantic, a small, private institution in Bar Harbor, Maine, offers only a Bachelor of Arts in human ecology. The college's approach to learning is fundamentally interdisciplinary and requires that students engage in problem solving to "develop important skills necessary to make meaningful contributions to society."⁵⁸ In 1997, Ball State University in Muncie, Indiana, established an innovative approach to sustainability through an interdepartmental program entitled "Clustered Academic Minors in Environmentally Sustainable Practices." As of 2001, the program included five minors in environmental policy, the environ-

mental context for business, environmental contexts in health care, sustainable land systems, and technology and the environment. The clustered minors are designed to expand the potential for integrative thinking by attracting students from other disciplinary areas. The closing course for all clustered minors is entitled "Creating a Sustainable Future."⁵⁹

Among professional schools, there are sporadic examples of education for sustainability across the spectrum, but it is too early to quantify progress in most cases. In schools of natural resources or the environment, there appears to be a trend toward explicit recognition of sustainability concerns. For example, the Yale School of Forestry and Environmental Studies "recognizes that equity and environmental progress must be combined and that a school of the environment must be a school of sustainable development."⁶⁰ Masters programs in international development, public policy and diplomacy frequently teach about sustainable development, however few programs make this integral to the coursework. Brandeis University's (Waltham, Massachusetts) Sustainable International Development Program, founded in 1994, offers an interdisciplinary Master of Arts degree that focuses on the state of world development and issues that affect future generations. Its mission is "to help build a new generation of development planners and policy makers for whom a global society free of poverty and environmental degradation is achievable."⁶¹ Engineering and technology schools are clearly engaging in the sustainability challenge, as the programs at the Georgia Institute of Technology (Georgia Tech) and other schools illustrate.

Business schools also appear to be responding to a rising interest in sustainability in the business sector. Beyond Grey Pinstripes 2001, a survey of graduate business schools in the Americas, Asia, Europe, and the United States, indicates a weak but growing commitment to teaching social and environmental issues. Fifty-eight out of approximately 403 U.S. Masters of Business Administration programs report including social and environmental topics in their courses. However, these issues are not yet being integrated into the core business curriculum and dedicated faculty remain isolated.⁶² Rare exceptions include the Kenan-Flagler Business

questionable choices of indicators and metrics. See Harold Glasser, *Murky Grades on Campus Sustainability*, TRUSTESHIP, Mar./Apr. 2002, at 34-35.

53. *Id.* at 15.

54. See Peter B. Corcoran, *The Florida Gulf Coast University Colloquium: A Graduation Requirement in Sustainability*, in COMMUNICATING SUSTAINABILITY, *supra* note 20, at 87.

55. Debra Rowe, *Environmental Literacy and Sustainability as Core Degree Requirements: Success Stories and Models*, in GREENING OF THE CAMPUS IV, *supra* note 37 (abstract).

56. For more information about this requirement, see <http://onestop.umn.edu/registrar/libed/index.html#THEMES> (last visited Mar. 30, 2002).

57. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 13. For an assessment of U.S. institutions' progress toward "problem-focused environmental study," see EDWARD J. KORMONDY & PETER B. CORCORAN, ENVIRONMENTAL EDUCATION: ACADEMIA'S RESPONSE 53, 65 (North American Ass'n for Envtl. Educ. 1997). In this study, a 1994-1995 survey of 122 universities with environmental programs (including environmental sciences, environmental studies, and environmental education) revealed that the overwhelming majority of these programs were experiencing steady increases in enrollments, and that students were both following their passion for environmental protection and seeking professional and marketable skills.

58. The College of the Atlantic academic program. See <http://www.coa.edu/ACADEMICPROGRAM/> (last visited Mar. 30, 2002).

59. For more information on Ball State's clustered minors program, see <http://www.bsu.edu/cluster/index.html> (last visited Mar. 30, 2002). Also of note, Western Michigan University's Environmental Studies department is striving to teach systems and integrated thinking in the context of the sustainability challenge. See <http://www.wmich.edu/environmental-studies/> (last visited Mar. 30, 2002). Also, "Environmental Studies and Awareness" is one of six "peaks of excellence" at Middlebury College, whose Program in Environmental Studies integrates the natural sciences, social sciences and humanities/literature, and emphasizes student internships to apply theory in practice in the community and surrounding region. See <http://www.middlebury.edu/~es/> (last visited Mar. 30, 2002). There are many other excellent examples of new and innovative programs.

60. See <http://www.yale.edu/forestry/about/index.html> (last visited Mar. 30, 2002). The University of Michigan School of Natural Resources and Environment is "dedicated to the protection of the earth's resources and the achievement of a sustainable society." See <http://www.snre.umich.edu/> (last visited Mar. 30, 2002).

61. See <http://www.heller.brandeis.edu/sid/> (last visited Mar. 30, 2002).

62. Furthermore, the survey indicates a "disconnect" between what business leaders are requesting regarding sustainability training for Master's of Business Administration graduates and what business schools are in fact delivering. Beyond Grey Pinstripes 2001 is a joint project of The Aspen Institute Initiative for Social Innovation Through Business and World Resources Institute (WRI). It is the third one conducted since 1998. See <http://www.beyondgreypinstripes.org> (last visited Mar. 30, 2002).

School at the University of North Carolina, Chapel Hill, which is well known for its dedication to “sustainable enterprises.” Based on the assumption that the world will begin demanding “sustainability” within the next decade, Kenan-Flagler launched a Sustainable Enterprise Concentration Area in 1999, which provides required and recommended courses on such issues as urban reinvestment and minority economic development, environmental management systems, social marketing, life-cycle management, finance and sustainability, and sustainable development.⁶³

Environmental law and international environmental law are included in many law school curricula, and several law schools have programs that emphasize or provide advanced law degrees in these subjects.⁶⁴ The Widener University Law School in Harrisburg, Pennsylvania, offers a Seminar on Law and Sustainability,⁶⁵ but this kind of explicit focus on sustainability in the curriculum is rare. Notably, The George Washington University Law School established the Center on Sustainable Growth in 2000, which explores sustainable solutions to the complex problems of urban growth. The center works closely with various departments and schools throughout the university, including the schools of Business and Public Management, Engineering and Applied Science, Public Health and Health Services, and International Affairs. It hosted the first national gathering on “Smart Growth and the Law” in September 2000.⁶⁶ Other professional schools appear equally slow to consider seriously incorporating sustainability in their curricula. The deans of schools of architecture, for example, increasingly claim to be interested in sustainable design, but there is little evidence of the topic entering core areas of study. As with business schools, external interest and demand seems to ex-

ceed the readiness of architecture and design schools to seriously embrace sustainability.⁶⁷

Research

Particularly critical to transforming American higher education is making sustainability a major research and scholarly focus. Sustainability-oriented research is increasingly funded in the sciences, but initiatives are also underway to bring the social sciences and humanities into the research dimension. The academic community has seen a rise in peer-reviewed publications focused on sustainability in higher education and on sustainability generally: the *International Journal of Sustainability in Higher Education* (Emerald) was launched in 2000; and *Environment and Sustainable Development* (Inderscience) is due in 2002. According to NWF’s 2001 survey, 23% of colleges and universities support research centers that focus on “environmental” issues. The level of support for these centers, however, and the degree to which they focus on issues concerning sustainable development is unknown. The following are some notable examples of efforts underway.

Numerous institutes of technology in the United States are turning their research toward sustainable technology. Georgia Tech, a leader in this area, hosts the Institute for Sustainable Technology and Development (ISTD), now the campus advocate for sustainability in curriculum, research, and operations. Recent research has focused on ozone pollution, fuel cells, diagnosing traffic gridlock, air pollution, and urban sprawl in U.S. cities.⁶⁸ Georgia Tech also supports the Environmentally Conscious Design and Manufacturing Program, which integrates a long-term research agenda in environmentally conscious design and manufacturing with on-going economic development activities in Georgia.⁶⁹ Furthermore, sustainability is a key theme in a new multidisciplinary building complex designed to support “research neighborhoods,” which break down traditional disci-

63. For more information on Kenan-Flagler Business School, see <http://www.bschool.unc.edu/> (last visited Mar. 30, 2002). Also of note, the Wharton School established the Zicklin Center for Business Ethics Research in 1997; and the University of Michigan Business School and the School of Natural Resources and Environment offer a joint degree, three-year Corporate Environmental Management Program. See <http://www.umich.edu/~cemp/index.htm> (last visited Mar. 30, 2002). Jonathan Lash, president of the WRI, claims that about eight business schools in the United States are hiring or have hired professors to teach and research in the area of sustainable enterprise.

64. See, e.g., Vermont Law School’s Environmental Law Center, whose mission is “to educate for stewardship and an understanding of underlying environmental issues and values,” see <http://www.vermontlaw.edu/elc/index.cfm> (last visited Mar. 30, 2002); and New York University Center for Environmental and Land Use Law, see <http://www.nyu.edu/pages/elc/index.html> (last visited Mar. 30, 2002). Also, environmental justice courses are taught on many law school campuses. See, e.g., a description of the Thurgood Marshall School of Law Environmental Justice Clinic, at <http://www.tsulaw.edu/environ/environ.htm> (last visited Mar. 30, 2002).

65. See John Dernbach and the Widener University Law School Seminar on Law and Sustainability, *U.S. Adherence to Its Agenda 21 Commitments: A Five-Year Review*, 27 ELR 10504 (Oct. 1997).

66. For more information on the Center on Sustainable Growth, see <http://www.law.gwu.edu/csrg/default.htm> (last visited Mar. 30, 2002).

67. Medical education has also shown little interest in embracing environmental responsibility or sustainable development. One notable effort, the Consortium for Environmental Education in Medicine (CEEM), was established by the Massachusetts Medical Society, Physicians for Social Responsibility, and Second Nature in May 1994. It is now a program within Second Nature, and provides resources for teaching and incorporating environment and health perspectives into undergraduate and graduate medical education. See <http://resources.secondnature.org/programs/ceem.nsf> (last visited Mar. 30, 2002).

68. See <http://www.istd.gatech.edu/default.asp?object=Project> (last visited Mar. 30, 2002).

69. See http://www.ecdm.gatech.edu/research_programs.htm (last visited Mar. 30, 2002).

70. See Jean-Lou Chameau, Changing a Mind-Set, Not Just a Problem-Set: Sustainable Development in Colleges of Engineering, presentation at 1999 Engineering Deans Institute, American Society for Engineering Education, Ethics in Technology and Social Responsibilities, at <http://istd.gatech.edu/documents/JLChameau%20EDI%20speech%201999.doc> (last visited Mar. 30, 2002) [hereinafter Changing a Mind-Set]. Several other engineering programs supported multi-disciplinary research and curriculum development initiatives in sustainability by the mid-1990s. For example, MIT engineering and Sloan School of Management faculty work on sustainability in business and industry. UC-Berkeley’s Consortium on Green Design and Manufacturing encourages multidisciplinary research and education on environmental management and pollution in critical industries. Notably, campuses with more than 4,000 students and public institutions are more likely than smaller and/or private institutions to house an environmental research institute. See STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 17.

71. Such centers include the Laboratory for Sustainable Solutions (LSS) at the University of South Carolina. Launched in 1997, the stated goal of LSS is to “bring awareness and understanding of industrial ecology and sustainability concepts to the forefront in South Carolina.” See <http://www.me.sc.edu/research/lss> (last visited Mar. 30, 2002). Similarly, the University of Michigan’s Center for Sustainable Systems (CSS), launched in 1999, develops life-cycle-based models and sustainability metrics for industrial systems.

plinary barriers by co-locating faculty from different departments who share research interests.⁷⁰

Georgia Tech, along with many other engineering schools and university-based centers,⁷¹ is helping to define the emerging field of “sustainability science.” The new practitioners of sustainability science claim that in seeking “to understand the fundamental character of interactions between nature and society,” the field is called upon to investigate the vast range of issues that sustainability encompasses, to do so with urgency if a crisis demands it, and to reconsider the usefulness of knowledge for both science and society. This is an action-oriented science for which a topic like climate change simultaneously demands scientific exploration and practical application. In line with Georgia Tech’s research neighborhoods, this new science depends on inventive techniques and requires problem-driven, interdisciplinary research.⁷²

In the social sciences and humanities, the privately funded South Carolina Sustainable Universities Initiative (SUI), led by the three major research universities in the state, has made a “mini-grant” program one cornerstone of its activities.⁷³ Mini-grants have funded research on such topics as sustainable tourism in South Carolina, environment and leisure, environmental children’s literature, and integrating sustainability into the English curriculum.

Faculty and Staff Hiring, Development, and Rewards

Few colleges and universities offer faculty development in sustainability or reward faculty for their contributions to the field. There are rare examples of schools that seek scholars with interdisciplinary training in environmental studies and another major discipline.⁷⁴ NWF’s study indicates that 8% of those schools surveyed “formally evaluate or recognize how the faculty has integrated environmental topics into their courses.” More surprisingly, the study shows that 50% of colleges and universities surveyed “support faculty professional development on environmental topics.”⁷⁵ This finding is in keeping with the growing number of environmental studies programs in the United States (nearly 45% according to this study), but does not indicate the extent to which such faculty support fosters interdisciplinary work or integrated thinking in the context of sustainability. Furthermore, to the degree that scholarly attention to sustainability issues includes en-

agement in real-world problems and public outreach (see the discussion of “sustainability science,” above), university departments are still far from embracing anything but “pure” research, untainted by popular writings or public speeches.⁷⁶ The following two approaches to faculty development, started in the mid-1990s, illustrate attempts to address sustainability.

Northern Arizona University (NAU), a medium-sized state institution, began a faculty development program in 1995 known as the Ponderosa Project.⁷⁷ Through annual two-day workshops, the project helps faculty from all disciplines revise their courses to include issues of environmental sustainability. An organic chemistry course uses environmental issues, such as the disposal of organic waste generated by industry, or the manufacture of fertilizers and pesticides, to teach key concepts. An archaeology course uses the Black Mesa Project in northeastern Arizona to raise issues such as environmental racism, environmental degradation, and overpopulation. To date, over 100 courses have been redesigned to reflect sustainability.

Georgia Tech has also made faculty development for sustainability a priority. Outside funding from General Electric in the mid-1990s enabled its ISTD to improve faculty understanding of sustainable technology through the development of a sequence of four courses on engineering and sustainability. This process fostered over time a large community of faculty (from all disciplines on campus) committed to incorporating these concepts into courses and research.⁷⁸

Operations

While many campuses have begun to redesign their operations based on eco-efficiency, waste reduction, and recycling, few schools have made a comprehensive commitment to such practices.⁷⁹ If performed well, these initiatives save money over the long term. A 1998 report by NWF’s Campus

The CSS is dedicated to interdisciplinary, multiobjective and multistakeholder participation. See <http://css.snre.umich.edu/> (last visited Mar. 30, 2002).

72. See Robert W. Kates et al., *Sustainability Science*, 292 SCIENCE 641 (2001). See also NATIONAL RESEARCH COUNCIL, OUR COMMON JOURNEY: A TRANSITION TOWARD SUSTAINABILITY (1999).

73. This initiative is discussed in more detail below in the section *Outreach and Service*.

74. In 2002, the University of Vermont’s School of Natural Resources sought a tenure-track scholar to specialize in the economic aspects of environmental sustainability. This faculty member is expected to develop a program of research and scholarship focused on Economics of Environmental Sustainability. Santa Clara University, in Santa Clara, California, recently hired an ecological archaeologist to work half time in Environmental Studies and half time in Anthropology, and a political ecologist to work in the Political Science and Environmental Studies departments. See Richard M. Clugston & Wynn Calder, *Critical Dimensions of Sustainability in Higher Education*, in SUSTAINABILITY AND UNIVERSITY LIFE, *supra* note 5, at 40.

75. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 17.

76. According to one young scholar writing for *The Chronicle of Higher Education*, tenure committees “view public service as a distraction, at best irrelevant to decisions about promotion and at worst a negative sign about a faculty member’s commitment to scholarship.” See Paul Sabin, *Academe Subverts Young Scholars’ Civic Orientation*, CHRON. HIGHER EDUC., Feb. 8, 2002, at B24.

77. For a thorough history and description of the Ponderosa Project, see GEOFFREY CHASE, FACULTY DEVELOPMENT FOR ENVIRONMENTAL SUSTAINABILITY IN HIGHER EDUCATION (1999), available at http://resources.secondnature.org/programs/starfish/biblio.nsf/667792b38551cf7a852563d50075b64f/4ff044c3206c1702852567b70051824e?OpenDocument&ExpandSection=1#_Section1 (last visited Mar. 30, 2002).

78. Changing a Mind-Set, *supra* note 70.

79. In a 2000 study of 50 North American universities with environmental management systems, I. Herremans and D.E. Allwright attempted to determine: “What drives good performance?” The study found that those institutions most likely to be successful had high-level administrative support and long-range objectives. Herremans and Allwright conclude that “the current state of EMS at North American universities is a patchwork of independent, autonomous functions (recycling departments, facility services, plant maintenance, etc.), that are not well coordinated, nor are they working towards a common goal.” See I. Herremans & D.E. Allwright, *Environmental Management Systems at North American Universities: What Drives Good Performance?*, 1 INT’L J. OF SUSTAINABILITY IN HIGHER EDUC. 168 (2000).

80. D.J. EAGAN & J. KENIRY, NATIONAL WILDLIFE FEDERATION’S CAMPUS ECOLOGY PROGRAM, GREEN INVESTMENT, GREEN RETURN: HOW PRACTICAL CONSERVATION PROJECTS SAVE MILLIONS ON AMERICA’S CAMPUSES (1998). Aside from the potential finan-

Ecology Program documented annual savings of over \$15 million from 20 selected U.S. campus conservation projects.⁸⁰ In part for this reason, more progress has been achieved in this dimension than in any other.

As concerns about energy scarcity and prices have increased in recent years, and cost-benefit analyses look promising, efforts to conserve energy (and water) have steadily increased on campuses in the United States since 1992. NWF's 2001 study, for example, indicates that 81% of campuses surveyed have enacted lighting efficiency upgrades. More than one-half of respondents said they have developed efficiency design codes for new and old buildings, and 72% reported they have installed efficient toilets, showerheads, and faucets in all or some campus units.⁸¹ Prevalence of transportation initiatives has been disappointing, with low percentages of responding institutions reporting progress in promotion of mass transit (23% for students, 19% for employees), carpooling (17%), or minimal use of alternative fuel campus vehicles (20%).⁸² A consistent finding from the NWF study is that respondents tended not to answer open-ended questions on campus energy and water consumption and waste generation. A likely reason is that respondents have neither accurate records nor regular data-gathering processes.⁸³ This suggests a greater need for regular campus assessments so that facilities managers are both informed and encouraged to improve conservation practices.⁸⁴

While there are hundreds of good examples of U.S. campus conservation efforts, the following initiatives illustrate some of the most ambitious and forward-looking.⁸⁵

In energy conservation, the State University of New York at Buffalo (UB) is a leading institution. Starting in 1982, UB initiated nearly 300 energy-related retrofit projects, including the installation of efficient lights and motors, weatherizing buildings, modifying heating and ventilating, and improving air conditioning systems. With the assistance of an energy service company on subsequent projects, UB

cial benefits of such initiatives, a practical and moral justification stems from the fact that universities and colleges house millions of students, and the average campus generates vast amounts of waste per year, consumes millions of kilowatt hours of electricity, and uses millions of gallons of water.

81. Sixty-two percent of campuses surveyed recycle or compost some solid waste, and 17% reported a solid waste recycling rate of 40% or more. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 39-40, 43.

82. *Id.* at 53.

83. *Id.* at 64-65.

84. A 2001 review of nearly 800 campus environmental assessments (in the United States and abroad) performed between 1989 and 2001 concluded that nearly all projects have suffered from poor intra- and inter-institutional coordination and insufficient resources, and that no accepted guidelines have been established for conducting quality assessments. This study, completed in early 2002, has made available a database of extant campus environmental assessments; an evaluation of current best practices in each assessment dimension; and a set of guidelines for performing "exemplary" assessments. See HAROLD GLASSER & ANDREW NIXON, WESTERN MICHIGAN UNIVERSITY, A COMPREHENSIVE REVIEW OF CAMPUS SUSTAINABILITY ASSESSMENTS (2001).

85. Aside from various websites and publications that feature current campus greening initiatives, two notable books on the subject are JULIAN KENIRY, ECODEMIA: CAMPUS ENVIRONMENTAL STEWARDSHIP AT THE TURN OF THE 21ST CENTURY (1995) [hereinafter ECODEMIA], with case studies and resources for greening campus operations, and SARAH HAMMOND CREIGHTON, GREENING THE IVORY TOWER: IMPROVING THE ENVIRONMENTAL TRACK RECORD OF UNIVERSITIES, COLLEGES, AND OTHER INSTITUTIONS (1998).

today saves about \$9 million dollars per year while producing a minimum of air pollutants and other wastes. UB's conservation programs have continued to expand with a recent campaign promoting "green computing," a needed response to the exponential increase in computer use on campuses everywhere.⁸⁶

Related to the UB story are emerging efforts linked explicitly to global climate change. The Tufts Climate Initiative (TCI) at Tufts University in Medford, Massachusetts, for example, is committed to meeting or beating the Kyoto target for university-related greenhouse gas emissions by the year 2012. Tufts and TCI are working diligently to address energy conservation on campus and contribute to an improved public understanding of climate issues.⁸⁷

Sustainable design on campuses is perhaps the most exciting recent trend in the HESD movement. It is particularly critical since estimates indicate that our built environment will double its size over the next 20 to 40 years. Ironically, the impetus for green buildings appears to be coming more from the liberal arts side of the academy (rather than the graduate schools of design).⁸⁸ Middlebury College in Middlebury, Vermont, for example, has a stated commitment to sustainable building practices, and has officially adopted green building principles.⁸⁹ Northland College in Ashland, Wisconsin, opened "the world's most advanced environmental student residence hall" in the fall of 1998. The building offers unique living and learning opportunities, which emphasize resource efficiency and renewable energy.⁹⁰ Oberlin College's recently completed Adam Joseph Lewis Center for Environmental Studies brings sustainable design into its mechanical and solar power systems, indoor air quality, material selection, landscaping, and wastewater treatment. The center is meant to serve "the larger education of the Oberlin community [which is] aimed to promote the practical skills and analytic abilities necessary to reweave the human presence in the world."⁹¹

Starting in the late 1980s, the Rutgers-Camden campus of State University of New Jersey began to transform its purchasing practices. Partly in response to the state's progressive environmental regulations, Rutgers' purchasing staff started to work with vendors on adapting bid specifications and contracts for the benefit of the environment. By the mid-1990s, they were attaching "public awareness clauses" to requests for contract proposals, encouraging

86. Most of this work has been pioneered by Walter Simpson, Energy Officer at UB. For more information on UB's energy saving policies and other environmental practices, see <http://wings.buffalo.edu/ubgreen/> (last visited Mar. 30, 2002).

87. See <http://www.tufts.edu/tie/tci/> (last visited Mar. 30, 2002). Oberlin College in Oberlin, Ohio, has a 2020 Project, which will produce a plan that would enable the institution to become "climate neutral" by the year 2020. The Oberlin plan includes thorough audits of the school's energy use and greenhouse gas emissions and the development of scenarios to reduce and potentially eliminate campus greenhouse gas emissions. See http://www.oberlin.edu/~envs/2020_proj/home.htm (last visited Mar. 30, 2002). Also of note, Lewis & Clark College (Portland, Oregon) students agreed in early 2002 to pay \$17,000 in student fees to become the first college in the United States to meet the Kyoto Protocol.

88. See *Curriculum* subsection hereinabove.

89. See <http://www.middlebury.edu/~enviroc/gbprinciples> (last visited Mar. 30, 2002).

90. See <http://www.northland.edu/studentlife/ELLC/index.html> (last visited Mar. 30, 2002).

91. See <http://www.oberlin.edu/newserv/esc/Default.html> (last visited Mar. 30, 2002).

vendors to support Rutgers' tough environmental standards. Rutgers' large annual budget demanded cooperation, but in the long run both parties benefitted. The contractor for recycling and waste hauling, for example, was required to place educational advertisements in campus publications and provide information on the latest industry trends, products, and recycling markets. Another major Rutgers vendor was required to reuse and reduce packaging and shipping materials.⁹²

Since the annual budget of the U.S. higher education sector now exceeds \$200 billion, environmentally responsible purchasing strategies have tremendous potential to push local and regional economies toward sustainability.⁹³ Universities appear to be catching on: nearly 50% of respondents to NWF's survey reported having programs to "encourage" environmentally sound purchasing, an indication at least of awareness and intent.⁹⁴

Student Opportunities

While student opportunities to engage in sustainability issues often arise through the university curriculum and campus outreach, this dimension is singled out to emphasize first, the centrality of students to the HESD movement, and second, the range of opportunities for students that could be further expanded in the service of sustainable development. The following two initiatives have made it a priority to focus on student development.

The Associated Colleges of the South (ACS), which includes 16 small, liberal arts institutions across the South, received a major foundation grant in 1997 to embark on an ambitious multi-year environmental initiative. A fundamental goal of the initiative is to cultivate and graduate "environmental citizens" from every member institution. The program is currently based on six "alliances," each committed to the same long-term goal but with a different emphasis. The Student Development and Engagement Alliance seeks to help the institutions prepare students for environmental or sustainability-oriented careers; train student leaders to expand education and awareness efforts on their campuses; and develop environmental campus projects through student grants. These objectives are intended to maximize student environmental interest and engagement on campus and to prepare students for related opportunities once they leave. A major challenge for the ACS Environmental Initiative, as with other initiatives discussed in this subsection, will be to ensure that alliance objectives become institutionalized at these schools, so that critical activities continue on long after outside funding has ended.⁹⁵

Another notable example of student engagement in pursuit of sustainability is the summer environmental intern-

ship program coordinated by Harvard University's Green Campus Initiative (HGCI). Eleven student interns in 2001 worked directly with different administrative units within the university on practical, results-oriented projects. Project outcomes included the introduction of organic foods in the dining halls, a study on computer energy reduction, research on alternative fuel vehicles, recommendations for a sustainable buildings policy, and a greenhouse gas inventory. According to HGCI's director, the internship program has provided "a new vision of how addressing campus environmental sustainability can occur in alignment with the university's core mission, conserving financial resources and enhancing human resources while also contributing to teaching and research outcomes."⁹⁶

Outreach and Service

There are numerous examples of innovative attempts on the part of universities and colleges to connect with their surrounding communities and beyond through projects and programs that contribute to sustainable development. Many of these involve students engaged in internships and service learning projects, and faculty engaged in research. Service learning has increased dramatically at institutions nationwide since the late 1990s. This trend has been embraced by mainstream higher education, and while it is not promoted in the name of sustainability, it is a good indication that priorities may be turning in that direction.⁹⁷ This subsection describes a community-based initiative at Allegheny College in Meadville, Pennsylvania, illustrating the potential for a deep level of involvement between a college and its surroundings. It also offers examples of newly emerging state-wide and regional partnerships for sustainable development involving universities and other organizations.

Allegheny College, a small liberal arts institution in rural Northwest Pennsylvania, hosts a Center for Economic and Environmental Development (CEED), which was created in July 1997 "to work with the community toward a forward-thinking vision for the region that is both economically inspiring and environmentally sustainable." CEED has numerous areas of focus, including watershed protection, educational outreach, sustainable energy, industry, agriculture and forestry, and environmental justice. Each year, nearly 150 Allegheny students work with over 100 community partners on sustainable development in the region. Projects include partnerships with local K-12 schools to investigate waterways and collaboration with landowners and logging companies to establish sustainable forestry in the region. The highly successful CEED initiative, like others of

92. ECODEMIA, *supra* note 85, at 6. See also KEVIN LYONS, BUYING FOR THE FUTURE: CONTRACT MANAGEMENT AND THE ENVIRONMENTAL CHALLENGE (2000). Lyons is director of University Procurement and Contracting at the Rutgers Camden office; the book tells the Rutgers story, with advice on putting environmental contracts into action.

93. There are efforts underway to create purchasing partnerships, especially among smaller institutions, in order to wield the kind of influence that Rutgers alone can. To date, these have not yet been established.

94. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 45.

95. For more information on the ACS Environmental Initiative, see <http://www.colleges.org/~enviro/> (last visited Mar. 30, 2002).

96. See Alvin Powell & Leith Sharp, *Environmental Internships Changing Harvard University*, THE DECLARATION, Dec. 2001, at 4. See also <http://www.greencampus.harvard.edu> (last visited Apr. 1, 2002).

97. Service learning actively engages students in their own educations through experiential learning in course-relevant community contexts. The American Association for Higher Education (AAHE), a major mainstream organization, started a service learning project in the late 1990s dedicated to the integration of service learning across the disciplines. The project has generated an 18-volume series designed to provide resources to faculty wishing to explore community-based learning through individual academic disciplines. See <http://www.aahe.org/about.htm> (last visited Mar. 30, 2002).

98. See Eric Pallent, *Allegheny College Is Transforming NW Pennsylvania*, THE DECLARATION, Oct. 2000, at 7.

its kind, spans both the “outreach” and “student opportunities” dimensions.⁹⁸

Since 1998, state and regional partnerships and coalitions between universities, government agencies, and NGOs have been forming to promote and share information on sustainability. This may represent the most significant single development in the advancement of HESD, since it indicates a growing critical mass of institutions within certain regions committed to changing state policy in support of sustainability. The following three initiatives vary considerably in terms of funding, structure, and range of activities, but they share a long-term goal of institutionalization of the programs and activities they support.

Founded in 1998, the New Jersey Higher Education Partnership for Sustainability (NJHEPS) is a coalition of 16 New Jersey colleges and universities promoting sustainability in teaching, research, operations, and outreach throughout the state. Partly supported with private funding, this initiative depends primarily on the in-kind services of member institutions. “Campus teams,” consisting of faculty, administrators, staff, and students, develop action plans, perform campus environmental inventories, and engage in campus-specific projects. Member institutions also seek partnerships with stakeholders such as government, businesses, and community groups. In a recent major achievement, NJHEPS was instrumental in getting the presidents of all New Jersey colleges and universities to sign a “covenant of sustainability,” committing their respective institutions to a state-sponsored Sustainability Greenhouse Gas Action Plan for New Jersey (which calls for a 3.5% reduction in the state’s greenhouse gas emissions by the year 2005).⁹⁹

The Pennsylvania Consortium for Interdisciplinary Environmental Policy, founded in 2000, is a partnership involving environmental policymakers (from the Departments of Environmental Protection and Conservation and Natural Resources) and 41 universities and colleges. On the belief that government decisionmakers and academia must work together to enhance sustainable development, the consortium is striving to overcome the traditional divide between scholarship and policy. The work of the consortium is done by program committees consisting of university representatives (primarily faculty) and state environmental policymakers. This structure encourages both collaborative, interdisciplinary thinking and institutional commitment. Current projects focus on greening the state’s colleges and universities and promoting a “Sustainable Pennsylvania” by addressing climate change and energy, watershed management, and land use decisions.¹⁰⁰ NJHEPS and the Pennsylvania Consortium are unique in that they are sustained primarily by their member institutions. Conversely, the following initiative is an example of how significant external funding can initiate reform in a comparatively conservative environment.

In 1998, Clemson University, the Medical University of South Carolina and the University of South Carolina joined together in a five-year SUI to lead the way toward a more sustainable future in the state through teaching, research, community service, and facilities management. In 2000, the

state’s General Assembly supported expansion of the program to include other state-supported institutions of higher education. By late 2001, 13 four-year and technical schools had joined. Like the ACS Environmental Initiative, SUI is privately funded and is striving, within the time limit of the grant, to establish programs that will permanently change the culture of participating institutions as well as the communities in which they reside. SUI supports a variety of programs in student and faculty development, campus environmental management, and community partnerships. The initiative’s unique approach is to help individual schools address the aspects of sustainability that fit each institution best.¹⁰¹

Institutional Mission, Structure, and Planning

An institution’s mission statement expresses its fundamental vision and commitment. Most university presidents and trustees are reluctant to tamper with these pronouncements, and only recently have more forward-looking schools voted to include an overt support of the environment or sustainable development. According to NWF’s survey, 34% of respondents claim to have either a written declaration linking education about environmental responsibility to the school’s mission, or a clear intent to do so.¹⁰² In contrast, a 1999 study of U.S. university websites found that only 10% showed an interest in the environment in their mission statements.¹⁰³ This subsection looks at two such institutions, explores the value of signed statements such as the Talloires Declaration, and cites the new prevalence of university offices and positions created for the support of campus sustainability.

In 1995, Middlebury College’s trustees endorsed the following Statement of Environmental Commitment:

Middlebury College as a liberal arts institution is committed to environmental mindfulness and stewardship in all its activities. This commitment arises from a sense of concerned citizenship and moral duty and from a desire to teach and lead by example. . . . Respect and care for the environment, sustainable living, and intergenerational responsibility are among the fundamental values that guide planning, decisionmaking, and procedures.¹⁰⁴

This was one of the first examples of a U.S. college making the values of sustainability foundational. It has led to the

99. For more information on NJHEPS, see <http://www.ramapo.edu/content/units/tas/njheps/> (last visited Mar. 30, 2002).

100. For more information on the Pennsylvania Consortium, see <http://www.paconsortium.state.pa.us/> (last visited Mar. 30, 2002).

101. The SUI mini-grant program, which supports research and course development, was noted above under “faculty development.” For more information on SUI, see <http://www.sc.edu/sustainable/> (last visited Mar. 30, 2002). Other notable networks and consortia include: the North American Higher Education Network for Sustainability and the Environment (see subsection *Support From Government, NGOs, and Higher Education Associations*, hereinbelow); and the North American Alliance for Green Education (NAAGE), a nonprofit consortium of 11 colleges across the country dedicated to nurturing proactive community members capable of creating a sustainable balance between natural and social ecologies. See <http://www.naage.org> (last visited Mar. 30, 2002).

102. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 25. Many schools also have written policies on a range of environmental issues.

103. See Taylor, *supra* note 47, at 14. His content analysis of 390 randomly selected U.S. university websites revealed that “institutions of higher education in the United States have, for the most part, not accepted the basic principles of environmental sustainability.”

104. The Middlebury Environmental Mission Statement was adopted by the college’s trustees in June 1995.

further institutionalization of environmental commitment at Middlebury with the hiring of a Director of Environmental Affairs, continued expansion of an innovative Program in Environmental Studies, and a bold new sustainable design policy.

In a very ambitious attempt to embody a broad definition of sustainable development, the Board of Trustees at Northland College approved a Sustainability Charter in July 1998. The charter begins: "We believe our greatest legacy, both to ourselves and to the outside world is to change the way we think about living, learning and doing business. As Northland College moves into the 21st century, the best of our ideals as an environmental liberal arts college can be channeled into long-term efforts to sustain living communities." The charter calls for educational innovation in sustainability curricula and programming; commitment to the well-being of future generations; global equity; ecological integrity; community vitality; and economic viability. Middlebury and Northland are genuinely striving to engage their students in a serious conversation about sustainability. They offer visionary examples for university presidents and trustees elsewhere.

A less integral but significant addition to an institution's mission statement comes in the form of signed documents such as the Talloires Declaration. In February 1994, the total number of signatories was 179, and U.S. signatories numbered 40.¹⁰⁵ That number now stands at about 73.¹⁰⁶ This suggests a growing recognition that academic research, teaching, and service must address the sustainability challenge. However, the perennial question regarding the Talloires Declaration (and other voluntary agreements like it, including the Halifax and Copernicus Declarations) is: "How many signatory schools have actually implemented the principles?" The usual answer is: very few. Ball State University may be the best U.S. example of a genuine attempt to do so. After Ball State's president signed the Talloires Declaration in April 1999, the school embarked on an ambitious multi-year plan to accomplish all 10 action steps. Separate committees were assigned to each step and plans of action have been drawn up with input from over 100 university representatives. The process is well underway, but so far without significant results.¹⁰⁷ In another example, Bowling Green State University, in Bowling Green, Ohio, has recently "rediscovered" the declaration, and used the signature of a past president to successfully request the formation of a committee from the new president to explore the implementation of the declaration.

According to one researcher, while few signatory institutions have organized explicitly around the Talloires Declaration, many have used it as part of an overall environmental strategy, particularly to establish legitimacy for environmental efforts.¹⁰⁸ Another researcher claims that while being a signatory institution is not a valid indicator of a univer-

sity's commitment to sustainability, international declarations are still significant because "they symbolize the prominence of the sustainability movement, aid in the communication of major ideas to universities around the world, and implore those who have not committed to any sustainability initiatives to 'get on board.'"¹⁰⁹ Three researchers studying the usefulness of international voluntary HESD declarations have criticized them for lacking compulsory requirements to demonstrate accountability. Based on a survey of 21 Talloires Declaration signatories (3 from the United States), the researchers concluded that the declaration was "not a crucial stimulus" to change, mostly because it lacks an implementation strategy, a monitoring process, and close guidance from the signatory secretariat.¹¹⁰

At a few universities in the United States, staffed offices have been established with mandates to incorporate sustainability into various facets of institutional life and the surrounding community. In these rare cases, the intent of the institution is to engage in the challenge of sustainable development in a comprehensive way. For example, the Office of Sustainability Programs, established in 1997 at the University of New Hampshire, "develops University-wide education programs and projects that integrate sustainability practices across all facets of the University including teaching, research and public service."¹¹¹ Interdisciplinary projects, which involve students and faculty as well as the local community, include Climate Education, Food and Society, Biodiversity Education, and Culture and Sustainability.¹¹²

The University of Florida Office of Sustainability, established in 2000, has three areas of focus: "Greening the University of Florida," a grass-roots movement of students, faculty, and staff which focuses on curriculum and operations; "Healthier Communities," which works to improve community health through sustainable practices on and off campus; and "Future Research Activities," which will establish funded research in the field of sustainability and help coordinate research teams across the university's range of competencies.¹¹³

Outside of these seven critical dimensions of university life, and primarily external to academic institutions, there are notable developments and efforts in support of HESD that warrant discussion before turning to recommendations for accelerating the transition to sustainability.

109. Wright, *supra* note 7.

110. See Julia Walton et al., *Environmental Accountability: Who's Kidding Whom?*, 26 ENVTL. MGMT. 525 (2000). See also Julia Walton, *Should Monitoring Be Compulsory Within Voluntary Environmental Agreements?*, 8 SUSTAINABLE DEV. 146 (2000). The NWF survey indicates that systems of accountability to environmental performance are present at fewer than 8% of colleges and universities. See STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 33.

111. See <http://www.sustainableunh.unh.edu/index.html> (last visited Mar. 30, 2002).

112. *Id.*

113. See <http://www.sustainable.ufl.edu/> (last visited Mar. 30, 2002). Other offices of note include Middlebury College's Office of Environmental Affairs, Michigan State University's Office of Campus Sustainability (established in 2000), University of Colorado Boulder's Environmental Center, and Harvard University's Green Campus Initiative (established in 2000). There are a growing number of "sustainability" officer or director positions appearing at universities around the country (ULSF calculated about 10 in 2001). NWF's survey indicates that 51% of schools surveyed have a recycling coordinator, and 36% have an energy conservation coordinator. STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 30.

105. ULSF, the Talloires Declaration Secretariat, does not have accurate information prior to 1994.

106. About two-thirds of these schools are public.

107. For a full report as of April 2001, see <http://www.bsu.edu/g2> (last visited Mar. 30, 2002). See also Wright, *supra* note 7.

108. This observation is based in part on a 2001 survey of U.S. Talloires Declaration signatories. See Michael Shriberg, *Sustainability Leadership in Higher Education: Motivations, Methods, and Outcomes Among Leading U.S. Four-Year Institutions* (working title) (doctoral dissertation, University of Michigan, School of Natural Resources and Environment, forthcoming 2002).

The Disciplines and Professions

It is the responsibility of eminent scholars in each of the academic disciplines to define what is understood and appropriate to pursue within them. Departments are the local, campus-based manifestations of the disciplines, and the current body of fact and theory accepted by the disciplines largely determines what is taught in these local places. Thus, promoting sustainability in higher education depends significantly on the active engagement of disciplinary leaders in promoting ecologically sensitive theory and sustainable practices as central to the scope and mission of their fields, e.g., in peer-review criteria for journal articles when relevant and in the themes and organization of professional associations.

It is a positive sign that numerous scholars are engaged in transforming their disciplines at both the national and local (campus) levels. Members of various professional associations have started special interest groups, divisions, or sections focused on the environment and sustainability. For example, the American Institute of Architects has a Committee on the Environment and provides an environmental education program for teachers called "Learning by Design."¹¹⁴ The American Society for Engineering Education and the American Association of Engineering Societies jointly sponsor an Engineers Forum for Sustainable Development, which was founded in 1997. The American Planning Association and the American Management Association both have formed special interest groups.¹¹⁵ The American Academy of Religion has an ecology and religion section. Professional journals are emerging, such as *Ecological Economics* and the *Journal of Interdisciplinary Studies in Literature and Environment*. The latter publication provides a forum for critical studies of the literary and performing arts proceeding from or addressing environmental considerations, including ecological theory, conceptions of nature and their depictions, the human/nature dichotomy, and related concerns.¹¹⁶ The May 2000, issue of *American Psychologist*, the journal of the American Psychological Association (APA), focused on "environmental sustainability" and its implications for the field.¹¹⁷ These are at least hopeful signs of a growing movement within the disciplines and professions.

114. It should be noted, however, that in 1999 the National Architectural Accrediting Board significantly reduced the emphasis on sustainability in its criteria.

115. Thomas Gladwin reflects in the *Academy of Management Journal* that

by disassociating human organization from the biosphere and the full human community, it is possible that our theories have tacitly encouraged organizations to behave in ways that ultimately destroy their natural and social life support systems. The task ahead for management theorists is one of reintegration. Will management scholars reconceive their domain as one of organization-in-full community, both social and ecological?

See Thomas N. Gladwin & James J. Kennelly, *Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research*, ACADEMY OF MGMT. REV., Oct. 1995, at 874.

116. Taken largely from Clugston & Calder, *supra* note 74, at 34.

117. See AM. PSYCHOLOGIST, May 2000. Also, a recent issue of another APA publication features the greening of psychology. See APA, MONITOR ON PSYCHOLOGY, Apr. 2001.

Support From Government, NGOs, and Higher Education Associations

The movement to promote HESD in the United States has had minimal and sporadic support over the years from the federal and state governments,¹¹⁸ minor but consistent support from a small number of NGOs focused on HESD, and minimal (though increasing) interest from higher education associations. Still, these various stakeholders deserve brief mention.

At the government level, environmental education is synonymous with sustainability education. The largest single source of funding and support for environmental education comes not through the U.S. Department of Education, but through the U.S. Environmental Protection Agency's (EPA's) Office of Environmental Education. A recent government report affirms that over the past several years "[the U.S.] Congress has appropriated less than \$8 million to support OEE's [Office of Environmental Education's] programs which in turn support programs at the international, national, state and local levels."¹¹⁹ The report also affirms that funding for environmental education at the state and local levels is at best inconsistent. This situation is confirmed by a 2000 report to Congress on the status of U.S. environmental education by the National Environmental Education Advisory Council (NEEAC), a consultative body that provides advice to EPA on implementation of the National Environmental Education Act of 1990.¹²⁰ The report states that "the overall national environmental education effort remains far weaker than it should be in terms of adequate funding, coordination and leveraging of resources, and serious evaluation and assessment tools."¹²¹ Furthermore, "environmental education has not been effectively infused into the educational reform movement, nor has it been institutionalized throughout K-12 or higher education. Thus, environmental education has not achieved the desired impact in government and business, or in communities."¹²²

Notable exceptions to the trends in government support for environmental and sustainability-related initiatives include two prominent campus greening efforts in the early 1990s and more recent initiatives in Massachusetts and Michigan. EPA gave initial funding to Tufts University and The George Washington University (GWU) in 1990 and 1994 respectively. These initiatives met with varying success, and support for the GWU initiative was short-lived due to changing priorities at EPA.¹²³ In 2000, EPA and the Massachusetts Executive Office of Environmental Affairs (EOEA) provided \$65,000 to conduct an assessment of the

118. State and local authorities are primarily responsible for formal education in the United States.

119. UNITED STATES OF AMERICA COUNTRY PROFILE (2001), available at <http://citnet.org/files/USA-WSSDCountryProfileReport.pdf> (last visited May 1, 2002). This is a superficial assessment of progress in the United States since Rio on every chapter of Agenda 21. This report provides brief descriptions of existing programs and projects supported primarily by the Office of Environmental Education. See also <http://www.epa.gov/enviroed> (last visited May 1, 2002).

120. NEEAC includes representatives from primary, secondary, and tertiary education, state departments of education, and the business and NGO communities.

121. See NEEAC, REPORT TO CONGRESS II (2000).

122. *Id.* at 11.

123. For information on GWU's "Green University Initiative," see <http://www.gwu.edu/~greenu/>. For information on "Tufts CLEAN!," see CREIGHTON, *supra* note 85, at 1-3.

four (nonmedical school) University of Massachusetts campuses to ascertain the level of education for sustainability activities and to develop plans to foster such programs. The EOEPA refunded this project in 2001 to further the implementation of sustainability programs. To date, the chancellors at every campus have been persuaded to appoint and charge official campus sustainability committees.¹²⁴ Also in 2000, EPA awarded Michigan State University (one of the largest single campuses in the United States) \$250,000 to develop a campus sustainability program.¹²⁵

States are supporting HESD efforts in small but significant ways: South Carolina contributed to the SUI in 2000; Pennsylvania gives basic support to the Pennsylvania Consortium; and New Jersey has contributed seed money to the Partnership for Sustainability there. The Minnesota Office of Environmental Assistance (MOEA) has recently funded several projects in higher education: a Midwest Green Campus Workshop in 2001 and a Greening of the Campus Conference in 2000; an ongoing ecological footprint project of the University of Minnesota Sustainable Campus Initiative and a University of Minnesota Center for Sustainable Building Research.

Since the early 1990s, four U.S. NGOs committed to promoting sustainability in higher education have helped articulate both the nature of a sustainable university and strategies for moving forward. These are NWF's Campus Ecology Program,¹²⁶ Second Nature,¹²⁷ University Leaders for a Sustainable Future (ULSF),¹²⁸ and World Resources Institute's Sustainable Enterprise Program.¹²⁹ In 1996, these NGOs formed an Alliance for Sustainability Through Higher Education to be a stronger voice for university re-

form. The alliance played a significant role in ensuring that higher education was included in the program of the National Town Meeting for a Sustainable America (National Town Meeting) in May 1999, an unprecedented gathering of over 3,000 Americans aimed to inspire a national movement toward sustainability.¹³⁰ Following the National Town Meeting, the PCSD disbanded (as anticipated), and the energy generated there quickly dissipated. The lesson learned was that sustainability was still not a national priority. These NGOs continue, however, to promote the HESD agenda by providing information and assistance, and working with institutions and individuals committed to slow but steady transformation. In January 2000, they helped launch a Higher Education Network for Sustainability and the Environment (HENSE), which expanded the original alliance to provide a more powerful platform for faculty, students, and professionals in Canada and the United States to share information, collaborate on HESD projects, and more rapidly advance the movement.¹³¹

Recent efforts of the National Council for Science and the Environment (NCSE) are very encouraging.¹³² Due largely to the NCSE's work, the National Science Board, in February 2000, approved a report, *Environmental Science and Engineering for the 21st Century: The Role of the National Science Foundation (NSF)*, which recommended that NSF funding for environmental, research, education, and scientific assessment should be increased by \$1 billion over the next 5 years, to reach an annual expenditure of approximately \$1.6 billion. This could be critical as an external stimulus for university research on sustainability-related issues. The NCSE has attracted leaders from the academic, scientific, governmental, environmental, and business sectors to its annual National Conference on Science, Policy, and the Environment. Sustainability science and its application was a central theme of the first two conferences, held in 2000 and 2001, and breakout groups have discussed the role of higher education in sustainability. The third NCSE conference, to be held in January of 2003, will have as its theme, "Education for a Sustainable and Secure Future." NCSE has also recently established a Council of Environmental Deans and Directors, which includes the deans of colleges of environment and natural resources and directors of institutes of environmental studies at more than 40 universities and colleges. The new organization facilitates peer-to-peer communication and collaboration and external relations with federal agencies, Congress, employers, and NGOs. This network will be a potentially powerful force for engaging internal and external stakeholders in the pursuit of sustainability in higher education.

Some higher education associations, like their disciplinary counterparts, are beginning to pay attention to sustainability issues. The Society for College and University Planning, the Association of Physical Plant Administrators of Universities and Colleges (APPA), and APPA's stra-

124. Walter Bickford is directing the project out of the University of Massachusetts, Boston Urban Harbors Institute. See <http://www.uhi.umb.edu/> (last visited Mar. 30, 2002).

125. See <http://www.msu.edu/unit/vprgs/RN%20Summer%202000/EPA%20grant.htm>. In the area of enforcement, EPA Region I has focused a portion of its efforts since the mid-1990s on colleges and universities after discovering that environmental noncompliance (primarily unsafe storage of hazardous waste) was endemic in this sector. Recently pressure has increased and the fining of prominent institutions has made national news. As of June 2001, EPA had conducted 31 inspections at major colleges and universities. See John Voorhees, *The Changing Environmental Management Scene: Federal Policy Impacts the Private and Public Sectors*, 31 ELR 10001, 10094-95 (Jan. 2001).

126. The Campus Ecology Program assists students, faculty, staff, and administrators with the design and implementation of practical conservation projects, providing training and incentives, and helping to document and share lessons learned. It has recently published the higher education survey used extensively in this Article. See <http://www.nwf/campus> (last visited Mar. 30, 2002).

127. Second Nature supports networking among stakeholder groups and faculty/staff development through interactive workshops; facilitates intra- and inter-institutional collaborations; and gathers and disseminates "best practices" resources. See <http://www.secondnature.org> (last visited Mar. 30, 2002).

128. ULSF is the secretariat for signatories of the Talloires Declaration, publishes case studies, provides sustainability assessment and evaluation, conducts research on HESD in the United States and promotes international partnerships and projects to support HESD abroad. See <http://www.ulsf.org> (last visited Mar. 30, 2002).

129. Formerly the Management Institute for Environment and Business, the WRI's Sustainable Enterprise Program works to infuse environmental principles throughout the core disciplines at business schools across the United States and in Latin America. WRI also sponsors the business school survey cited in the *Curriculum* subsection above. See <http://www.wri.org/wri/meb/> (last visited Mar. 30, 2002).

130. The National Town Meeting was sponsored by the PCSD and the Global Environment and Technology Foundation.

131. See <http://www.hense.org> (last visited Mar. 30, 2002). HENSE has supported various HESD projects and continues as an informal network, raising money as needed.

132. NCSE (formerly NCIE) is a nonprofit organization, working since 1990 to improve the scientific basis for environmental decision making and supported by nearly 500 academic, scientific, environmental, and business organizations. See <http://cnie.org/NCSE/> (last visited Mar. 30, 2002).

tegic partner, the Professional Grounds Maintenance Society, have identified environmental issues as an important global concern that must be addressed by the organizations' constituencies through specific initiatives. The American Association for Higher Education and the Association of Governing Boards of Universities and Colleges are also starting to look seriously at the challenge of sustainability for higher education and recognize the need to educate their constituencies on the issues involved.¹³³

Clearly, most of the motivation and funding for HESD in the United States are coming from within. This is occurring despite tremendous barriers to change within the structures of higher education. The numerous projects, programs, reforms, and initiatives that have been discussed in this section speak for themselves. They indicate a significant effort on the part of many individual faculty, administrators, students, and staff to change the institutions in which they work to better reflect our fundamental challenges in the world at large.

Recommendations

In the next 20 to 40 years, society must adopt new strategies that allow the needs of an expanding population to be met in an environmentally sustainable and equitable manner. Higher education will play a critical role in determining whether we succeed or fail.¹³⁴

Academic institutions reflect and refine the priorities of the society in which they function. They adapt to the demands of government and foundations, students and employers, the disciplines and professions. The curriculum is shaped by what the disciplines perceive as legitimate and what federal funding, state legislators, and jobs require. A variety of factors determine the success of sustainability initiatives in higher education. Bok points to the determining influence of external forces, i.e., the extent to which funders, the academic disciplines, and the public—especially parents, students, and employers—regard sustainability as essential.

In addition, there are a variety of determining factors internal to higher education institutions, such as the ability of sustainability champions to draw others into these issues; the support of key administrative leaders; the perceived benefits of sustainability initiatives among the different campus constituencies; a strong fit between the initiatives and the institutional ethos and culture; the engagement and participation of a broad section of the campus community; and the success of the initiatives in attracting critical resources.¹³⁵

Our fundamental recommendation is to mobilize a critical mass of internal and external stakeholders to fully develop, in a variety of higher education settings

and communities, the model sustainable university described hereinabove.

The specific recommendations below are organized to highlight the changes that must be made internally and externally to ensure a deep commitment to sustainable development in higher education. There are two levels to these recommendations: (1) what colleges and universities should be doing themselves to advance sustainability; and (2) how to encourage these changes in higher education through the specific actions of key stakeholders. These recommendations address three critical constituencies: (1) each of the over 4,000 higher education institutions in the United States; (2) the disciplinary and professional associations of the many academic, professional, and administrative fields in higher education; and (3) the external stakeholders—particularly government, foundations, private sector employers, NGOs, media, parents, and students.

Over the past decade a variety of groups have studied higher education and identified what is needed to make progress toward sustainability in higher education. The recommendations below are drawn from numerous helpful sources cited above.¹³⁶

Recommendations for Incorporation of Sustainability in Teaching and Practice

(1) Higher education must commit itself to steady reform in teaching, research, faculty and staff hiring, and development, operations, student opportunities, outreach, and mission and structure. More specifically, colleges and universities should:

Promote interdisciplinary *teaching and learning* to cultivate integrated thinking and decision-making skills, as well as negotiation and mediation skills¹³⁷; support more active and experiential learning through internships and service learning.

Support sustainability-oriented *research* in all disciplines,¹³⁸ utilizing “research neighborhoods” where possible.¹³⁹

Hire *faculty and staff* based in part on potential contributions to interdisciplinary programs and sustainability on campus; offer faculty development for sustainability, including workshops and conferences; change tenure and promotion requirements to reward innovative scholarly focus on sustainable development and contributions to public debate and policy development.¹⁴⁰

133. AGB managed to get “sustainability” on the short list of priorities for governing boards in 1999 and 2000. However, other concerns took precedence in 2001. AGB also devoted the entire spring 2000 issue of its membership publication, “Priorities,” to HESD. See Charles S. Clark, *Campuses Move Toward Sustainability*, PRIORITIES (ASS'N OF GOVERNING BOARDS), Spring 2000, at 1-16. The general data on higher education associations is taken from ALDO MORRI, WORKING WITH HIGHER EDUCATION ORGANIZATIONS FOR A MORE SUSTAINABLE FUTURE (NWF Campus Ecology Program 2000).

134. ESSEX REPORT, *supra* note 34, at 4.

135. These factors are summarized from a discussion in Clugston & Calder, *supra* note 74, at 34.

136. The ESSEX REPORT, *supra* note 34, for example, utilizes *Blueprint for a Green Campus*, the Talloires and other declarations and makes thoughtful recommendations for accelerating change toward sustainability. A more recent NWF Campus Ecology commissioned study of higher education associations and the recommendations of the National Council for Science and the Environment are also drawn upon for this section.

137. ESSEX REPORT, *supra* note 34, at 18.

138. David Orr, professor of environmental studies at Oberlin College, asserts that committed universities would “conduct research to support sustainable livelihoods, sustainable communities and ecological economics.” See Richard Clugston, *A Strategy to Accelerate the Shift to Sustainability Through Higher Education*, THE DECLARATION, June 1998, at 1.

139. Model used at Georgia Tech (see *Research* subsection hereinabove).

140. ESSEX REPORT, *supra* note 34, at 21.

Conduct annual campus environmental assessments with public disclosure; create multi-year plans to reform physical *operations* to make campuses model sustainable communities¹⁴¹; buy green products and use campus purchasing to leverage development of sustainable local and regional economies.¹⁴²

Foster *student engagement* by creating a student environmental/sustainability center on campus¹⁴³; support student activism beyond the campus¹⁴⁴; encourage interdisciplinary and integrated thinking through internships, service learning, work study and capstone courses; reform university career services to include a major focus on environmental and sustainability-related jobs.¹⁴⁵

Conduct *outreach* that links service to wider community efforts to establish just and sustainable cities, bioregions, and global economies.

Encourage university presidents to sign the Talloires Declaration or make sustainability a major component of university *mission* statements; create official positions or offices that lend support to campus sustainability efforts.

(2) Form partnerships for sustainability with other universities and organizations, especially on the state level. This recent practice has been particularly successful, especially on a state or regional basis, and should be a first level strategy for advancing the HESD movement.

(3) Higher education leaders must speak out on the importance of a societal shift toward sustainability, as well as advocate for government funding to support interdisciplinary, environmental, and development research.¹⁴⁶

(4) Incorporate environmental reporting mechanisms into institutional sustainability action (or implementation) plans, especially with Talloires Declaration signatories. Corporate environmental reporting is an established and successful process for ensuring accountability, and it is easily adapted to higher education. Such mechanisms can ac-

commodate individual institutions at different stages of progress toward sustainability.¹⁴⁷

(5) Identify and disseminate best practices. Hundreds of stories and case studies describe successful environmental and sustainability initiatives in U.S. universities. One effective way to facilitate further change is to collect and disseminate these individual success stories (as well as examples of what did *not* work), and to elevate the visibility of the good models that already exist. European universities can also offer many exemplary models. Various European countries have made sustainable development a more central social priority than it is in the United States. They maintain their national councils on sustainable development and encourage the use of Agenda 21 in their colleges and universities.

(6) Support research, analysis, and capacity building for HESD. More research is needed to develop sustainability indicators for higher education and to conduct in-depth research and evaluation of sustainability in higher education. There are many sustainability initiatives underway. Yet the information we have on them is mostly anecdotal; we do not really know how well these initiatives are working and why. To strengthen sustainable development in higher education we need research to develop:

Analytic frameworks for further defining and understanding sustainability in higher education.

Comprehensive case studies on the range of sustainability initiatives in higher education (both in the disciplines and professions and in various types of institutions). These would be both longitudinal and cross-sectional—looking at all institutional dimensions—and analyze degrees of institutionalization as well as factors determining success or failure.

Formative evaluation and assessment processes that can assist institutions and disciplines in moving down the path toward sustainability.¹⁴⁸

Regional centers for faculty development to accelerate this transition. Those locations that already embody sustainability most fully can provide education, demonstration, and research services to higher education.¹⁴⁹

Strengthening Sustainability as a Major Concern of the Disciplines and Professions

For sustainability to become a priority of the university—beyond cost savings and responding to specialized demands—it must become a priority of the specialized academic organizations that influence universities. The disciplinary and professional associations largely determine what is taught in the departments and programs of the insti-

141. Orr suggests that successful universities would aspire to “power campuses with current sunlight plus efficiency; eliminate waste in all forms, becoming zero discharge campuses; and adopt green standards for architecture and landscaping.” See Clugston, *supra* note 138, at 1. Abundant information exists for developing environmental management systems for campuses that achieve operational reform in a systematic and comprehensive way. See, e.g., Voorhees, *supra* note 125.

142. Using, for example, the Rutgers model (see *Operations* subsection hereinabove).

143. See BLUEPRINT FOR A GREEN CAMPUS, *supra* note 32.

144. See *id.*; CLASS OF 2000 REPORT, *supra* note 35.

145. See ACS Environmental Initiative, *supra* note 95; see also ULSF, Sustainability Assessment Questionnaire, available at http://www.ulsf.org/programs_saq.html (last visited Mar. 30, 2002).

146. See ESSEX REPORT, *supra* note 34, at 20. NWF’s 2001 survey lends support to this recommendation: 64% of those presidents and executive officers surveyed felt that “environmental programs” fit with their local culture and values; 60% claimed that government regulations “played a role in shaping their environmental programs.” STATE OF THE CAMPUS ENVIRONMENT, *supra* note 47, at 45. Orr has been an outspoken advocate for sustainability in higher education since the mid-1980s, and many have been inspired by his writings and actions. Paul Sabin, a young and publicly engaged scholar, speaks eloquently to this issue. Sabin, *supra* note 76.

147. See Walton, *supra* note 110; Walton et al., *supra* note 110. Some higher education institutions in the United Kingdom are employing environmental reporting.

148. NEEAC’s *Report to Congress II* supports this recommendation in calling for a national measure of environmental literacy, a national assessment of status of environmental education within the United States, and other research on the effectiveness of environmental education. See REPORT TO CONGRESS II, *supra* note 121, at 12-13.

149. See Clugston, *supra* note 138, at 1.

tutions through their journals, their influence upon accreditation boards, and their role in faculty development. Therefore strategies must be developed to:

Foster special interest groups and strong disciplinary foci on sustainable development.¹⁵⁰

Gather and present compelling information to higher education associations that highlights the long-term cost advantages of many environmental improvements.¹⁵¹

Work with college and university accreditation organizations.¹⁵² These organizations should be educated to understand the importance of sustainability and how and why colleges and universities must help develop environmentally and socially aware citizens.¹⁵³

*Recommendations for External Stakeholders Such as Opinion Leaders, Alumni, Employers, and Funders*¹⁵⁴

(1) External stakeholders should pressure federal and state governments to move the education and research agenda of higher education toward a greater focus on sustainability. Since the federal government provides over 90% of the funding for academic research, it influences deeply the priorities for research and helps shape academic fields.¹⁵⁵ Federal agencies such as the U.S. Department of Education, the National Science Foundation (NSF), and the U.S. Department of Energy (DOE) could make sustainability a major focus of higher education if those agencies made sustainability a research priority. Organizations such as the NCSE, which is positioned to leverage support for sustainability teaching and research through federal agencies, should aggressively do so.¹⁵⁶

150. See the subsection *Disciplines and Professions*, hereinabove.

151. This recommendation, the low-hanging fruit approach, is supported by MORRI, *supra* note 133. Also, NWF's publication, *GREEN INVESTMENT, GREEN RETURN* (1998), has already been well received and deserves more promotion in this regard.

152. Many such organizations exist in the United States, based on geographic groupings, disciplines, and minority status.

153. Presidents and provosts report that this is an effective way to get their attention because of pressing time commitments. See MORRI, *supra* note 133.

154. As Anthony Cortese observes:

Higher education is not likely to change in its direction far enough or fast enough without strong outside influence. Strong, rapid and largely unprecedented efforts by all of higher education's stakeholders are necessary to motivate the system on a path to sustainability. Students, parents, prospective employers, organizations funding research and education (government, industry and foundations) and the public are all consumers of higher education's services. If we are to encourage the educational system to produce the environmentally aware professionals and specialists needed to lead us on a sustainable path, the stakeholders must work with the higher education system in creative ways to encourage environmental education and research.

See ESSEX REPORT, *supra* note 34, at 18-19.

155. European government funding flows toward sustainability research, and because the federal governments play a key role in establishing university curricula, sustainability is more present as an organizing principle.

156. NCSE published recommendations in 2000 urging NSF to support: (1) development and evaluation of interdisciplinary curricula and their dissemination; (2) campus community partnerships in order to encourage service learning for sustainability, recruit minority stu-

(2) External stakeholders should actively encourage colleges and universities (especially those schools with which they are directly affiliated) to educate for a sustainable future.

Clearly if parents, students, and employers demanded that college and university graduates be ecologically literate and oriented to sustainable living, higher education institutions would move rapidly in this direction. If bequests and alumni donations were directed toward sustainability initiatives, this would also encourage significant adoption of sustainable practices.¹⁵⁷ The question is how to get these critical stakeholders to value and demand sustainability from higher education. It is at this level that our strategies, as advocates for HESD, must also be directed.

(3) Funders of educational initiatives (especially foundations, governments, and industry) should expand their support for higher education programs (such as the ACS Environmental Initiative and the South Carolina SUI), as well as NGO projects that promote HESD. Groups like the Funders' Forum on Environment and Education should more aggressively advocate for such support.¹⁵⁸

Conclusion

The United States has barely acknowledged Agenda 21, let alone attempted to implement it. But despite our failure to address the worsening environmental, social, and economic trends here and around the world, we are making progress in understanding how to create a sustainable future. The theoretical framework and practical models are being clarified; the knowledge, skills, and sensibilities are emerging. The direction we need to go is becoming clearer. We must change the economic bottom line to value full human development in healthy ecosystems; we must eliminate subsidies for unsustainable practices; and we must shift production and consumption patterns to eliminate violence and poverty, to support all life, future generations, and social justice. We must also recognize our limits and honor the deeper meaning and mystery of life.¹⁵⁹

Many academic institutions have focused on greening their campus operations. Some have transformed their curricula to reflect the complexities and values of sustainable

dents into environmental fields, and support culturally sensitive transfer of knowledge among societal groups; and (3) training for graduate students in areas relating to sustainability and its integration into different aspects of university life. See NCSE, *RECOMMENDATIONS FOR IMPROVING THE SCIENTIFIC BASIS FOR ENVIRONMENTAL DECISION MAKING, A REPORT FROM THE FIRST NATIONAL CONFERENCE ON SCIENCE, POLICY, AND THE ENVIRONMENT* (2000).

157. The ESSEX REPORT, *supra* note 34, at 23, presents an articulate wish list for actions by parents, alumni, and future employers.

158. Subgroup of the Environmental Grantmakers Association that promotes funding for environmental and sustainability education. See <http://www.ega.org/index.cfm> (last visited Mar. 30, 2002).

159. See Richard M. Clugston, *Towards the World Summit on Sustainable Development*, EARTH ETHICS, Spring 2002. The Earth Charter, an international declaration of fundamental principles for building a just, sustainable and peaceful global society in the 21st century, has emerged today as one of the most elegant and comprehensive definitions of sustainability. Completed in March 2000, the charter is part of the unfinished business of the Rio Earth Summit. It is increasingly being seen as a tool for sustainability education and an international charter education program has been launched.

development. A few have positioned themselves as leading “sustainable universities.” Yet, when a critical champion leaves, when major external funding dries up, or when staff seek to move from rhetoric to reality, these initiatives often reveal their lack of real support in the institution. Thus, sustainability initiatives meet with various degrees of success. In some institutions, seemingly broad-based and strong initiatives have faded away. In others, significant academic programs and operations policies have been institutionalized. Despite the many impressive initiatives in progress around the United States, the deeper challenge of transforming the disciplines to teach integrated thinking for sustainability—and placing value on this transformation—eludes us.

American higher education can be very innovative and adaptive. Leaders in a variety of institutions have grasped the critical need for sustainable development, and they have created a variety of exemplary responses. However these innovations will never move into the mainstream until critical stakeholders demand it. Gore, in *Earth in the Balance*, said that the environment must become a central organizing principle for the 21st century.¹⁶⁰ He went on to propose a massive federal initiative—like the Marshall Plan—to fund the transition to a sustainable future. The same Gore, as a presidential candidate eight years later, closed down the PCSD, in

160. AL GORE, *EARTH IN THE BALANCE: ECOLOGY AND THE HUMAN SPIRIT* (reprint 1993).

part because he did not think sustainability would get him elected. Gore was right the first time and perhaps the second time too. Educators need to raise public concern, lobby for funding, and work within the disciplines to make real progress to-

ward HESD in the United States. But success, as Bok points out, will depend ultimately on the demands that the disciplines, professions, and funders place on higher education.