The Case for Advancing Sustainable Development in Higher Education: an Economic Perspective

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Sustainable development is becoming high on the political agenda due to global warming concerns. If we are to meet environmental and social challenges of this century, we must deepen sustainability awareness across the globe. The most effective way for promoting sustainable development is by developing the capacity of all stakeholders through education. Under these requirements, universities and colleges seem to be in a unique position to take a leadership role on sustainable development. As leaders, they can envision and strategize towards a global and successful solution; as centers for learning, they can educate and empower students to address issues related to climate change, energy efficiency, as well as sustainability in its broader definition. This paper explores the economics of higher education in developed countries, and more particularly in the United States, by investigating the demand and supply for integrating environmental issues into higher education programs. The paper shows that there is a market push and a high return-on-investment opportunity for preparing graduates equipped with an adequate conceptual and scientific framework to devise solutions to real world challenges affecting society and the environment.

Introduction

Humans have always faced difficult challenges when interacting with nature and the environment. Yet in the past, these were isolated events affecting only a few and for a limited amount of time. Today, warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level (IPCC, 2007). In other words, the debate is over. Global warming is here and humans are the ones causing it. This is clearly the defining challenge of our era, and is going to demand radical innovation and major reforms across the spectrum of human activity starting by our definition of economic growth and its underlying operating conditions. It becomes clear now that the limiting factors for a future economic growth are not anymore labor and technology (Hawken, Lovins, & Lovins, 1999). They are, instead, our natural resources and our social capital, and our ability to sustain them.

Far more disturbing, climate change is occurring along with other large-scale environmental and social problems. The ever-accelerating progress through planned development has been disappointing at best. While a few have attained material abundance, countries, including rich and democratic ones, are having difficulties providing basic needs for their unprivileged and poor populations. Such harsh reality represents a crying call for action. There’s a pressing need for a restorative economy as described by Hawken (2005); an economy which unites ecology and commerce into one act of production that mimics and enhances natural processes.

Corporations will face a new challenge in learning to operate and produce in a manner that does not endanger the planet. The good news is that sustainable development is increasingly part of mainstream conversations at all levels involving business, governments, and civil societies. The business world is starting to acknowledge that the environment is playing an increasingly prominent role in all facets of our society and in the way economic activities are to be conducted in the future. It is also realizing that the integration of these considerations into business strategies could offer an opportunity for a competitive advantage.
and a pathway to long-term growth and prosperity. Yet, companies also admit lacking a conceptual framework that allows them to integrate the environment into their decision making process. Adding sustainability to a government’s economic policy or to a business’s strategy and operations is a complex undertaking. It requires a whole new mindset (Hedstrom, 2002) and a systems thinking approach to not only achieve compliance to environmental regulations, but also to open a panoply of new sustainable business opportunities. It requires interdisciplinary knowledge from most citizens, employees and workers; a skill lacking in the way higher education currently prepares graduates to face the challenges of a changing world. Even if most universities incorporate environmental study programs and that green campus initiatives are well underway across the United States and Europe, graduates currently leave college with the mindset of well-trained consumers who generally contribute to, rather than address, the growing array of sustainability problems. Nevertheless, the importance of higher education, particularly in Science and Engineering, is widely recognized around the world for its impact on innovation and economic development. This importance can also be demonstrated by the tight correlation between a country’s well being and the education level of its citizens.

This paper makes the economical and business case for integrating sustainability into higher education by re-structuring most of the courses, research programs, and campuses. The revised mission must be to infuse knowledge, skills, and values into future graduates to lead us down a sustainable path. Higher education must lead the efforts in research and practice to be a model for the rest of society.

The challenge of sustainability

The concepts of sustainability and sustainable development were introduced a few decades ago out of the debate between proponents of classical economic theory – in the tradition of Adam Smith – on the one hand and environmentalists on the other. Today, there are many definitions of sustainability and sustainable development (Pearce & Barbier, 2000). For some, such abundance has been quite deliberate, allowing each community to choose the definition which suits them best according to their own context. But regardless which definition we take, our current economic system remains grossly unsustainable; a fact still ignored by most traditional economists who tend to rely on technology and human ingenuity to always rescue us. Yet, what seems to be missing from their equation is that for any rescue operation to take place, resources are also required.

Making the economic case is not the only challenge for sustainable development. The path to sustainability is complicated, both in theory and practice, and encloses scientific as well as many other non-technical aspects. To that end, the principles of sustainability have been extended beyond environmental and economic factors to include cultural, social, and political principles as well; each dimension presenting specific challenges. To be able to efficiently address these, future generations of graduates need to acquire a new set of skills and to look at problems with a different mindset.

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1 The most quoted definition of sustainable development comes from the Brundtland Report which defines it as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).
The complexity challenge

The issues of sustainability touch every discipline. It is a complex process that goes beyond environmental and economic challenges. Pursuing a path of sustainable economic and social development, while protecting the environment, is a global undertaking that requires tremendous levels of effort, knowledge, and global cooperation. Any approach towards a sustainable future must embrace interdisciplinary systems thinking to analyze, strategize, and act on local and global scales over short and long time periods. Apart from breakthroughs in technology – particularly in energy and environmental sciences – we need to promote changes in behavior, leadership, stewardship, politics, and many other non-technical aspects; the latter being equally essential to address the sustainability challenge itself in a sustainable way. Complex social processes of change require “systems renewal” or transitions, which as a concept, integrate technological, cultural and structural elements (Fokkema, Jansen, & Mulder, 2005).

Adding to the complexity, a sense of urgency as expressed by scientists requires the world to act swiftly. We have reached a situation where we have never been before with a consensus among scientists that we need Carbon Dioxide (CO2) reductions of 60-80% over 30-40 years to stabilize our climate.

The cultural challenge

Changing people’s mindsets is by far the biggest challenge for sustainability. Following Einstein’s dictum that problems cannot be solved within the mindset that created them, Hawkin et al. (1999) argue that the first step toward any comprehensive economic and ecological change is to understand the mental model that forms the basis of present economic thinking. The problem ultimately is that environmental crises are crises of social organization and cultural character (Norgaard, 1994). In a comprehensive analysis of the causes behind environmental disasters and social injustices, Norgaard argues that these are rooted in three underlying tenets of modernism. The first tenet relates to the reliance on western’s science ability to steadily provide a better control over nature; excusing people from the moral dilemma of addressing the effects of their decision on the opportunities for the next generation. The second tenet is the belief that values and facts can be kept separate, and therefore, experts can work in their own field without being involved in most social decision making. The acceptance of this tenet has led to the development of centralized technocracies including in democratic societies. The third is characterized by the belief in the superiority and effectiveness of the western culture and in its eventual dominance over other cultures.

The current situation requires that we to reassess these believes. Progress towards sustainability must be rooted in people’s cultural values (Thaman, 2002). This means that sustainable development must take into consideration local cultures and values as instruments for understanding the way local societies have developed over time – some of them sustainably – and the way they might sustainably develop in the future.

Translating into actions, metrics, and results

Many argue that sustainability is an unrealistic concept, which is difficult to translate into actionable plans. To do so, there’s a need to develop and implement models and metrics that guide, accelerate and deepen the implementation of sustainability strategies. Effects of sustainability initiatives are of primary interest to both companies and governments. Particularly, financial effects are often the subject of disagreements and sometimes ignorance
regarding the robustness of the business case for corporate sustainability. Moreover, most organizations, who started implementing sustainability initiatives, approach it from economic and environmental dimensions and less so from social or cultural dimensions. The lack of models, metrics, and tools at the social level may prevent sustainability leaders from undertaking large scale initiatives which often require an initial investment. It may also deter companies from including social actions into their sustainability strategies. Therefore, the existence of robust tools for assessing and tracking progress is of major importance to proponents of sustainable development. This is essential to prevent the social dimension from becoming “the forgotten child” of sustainable development.

Existing work in this area include sustainability models that consider aspects of the economy-environment-population nexus, are dynamic, and acknowledge the disparity among stakeholders (Liddle, 2003). In his working paper, Liddle proposes a simulation model to assess sustainable development on three levels: economic (by determining production, consumption, investment, direct foreign investment, technology transfer, and international trade), social (by calculating population change, migration flows, and welfare), and environmental (by calculating the difference between environmental pollution and upgrading expenditures). The model follows “representative” countries that differ in their initial endowments (i.e., natural resource endowment, physical and human capital, technology, and population), and thus in their development levels and prospects. A more recent description of how important and common quantification is can be found in Salzmann et al. (2005).

The economic case for sustainable development

Industries are in an almost constant state of evolution and transformation. They move through a cycle that includes birth, growth, maturity, and ultimately decline (Allen, 2003). In this cycle, the sustainable development industry is still in its birth stage, on its way towards growth and adaptation. This early phase offers opportunity recognition (Figure 1); the first stage in the development of a business concept. Yet, It is clear that any breakthrough in commitment to environmental protection will be economically feasible only once we have clearly established that the cost of remediation is less than the cost of the status quo, and that economic benefits can arise from investing in environmental management options. One of the greatest barriers preventing corporations from promoting sustainability initiatives is a widespread – and equally wrong – belief that environmental measures are prohibitively expensive. Making the economic case for sustainable development starts with the question “what kind of economy our world would tolerate to have in the future?” From such vision, we can “backcast” and derive the actions needed by the economy to become, not only tolerated, but even prosperous in such future society.

A strategic imperative

An increasing number of companies already believe that sustainability issues will occupy a central place in the way economic activities are conducted in the future. Research has already shown that known environmental costs were often as high as 12 to 15 percent of sales; this is without accounting for very important externalities like greenhouse gas emissions and relatively free water. Companies also realize that the integration of sustainability considerations into their business strategies could offer competitive opportunities and a sustainable growth. The slow but steady involvement of most governments to push towards more regulations on climate change highlights the imperative as well as the potential for renewable energy developments, low-carbon technologies, and sustainable products and services.
As a result, innovative methodologies have been emerging in the past few years in an attempt to bring environmental dimensions into the core of economic planning. Incorporation of environmental costs in macroeconomic indicators has been gaining momentum and helped shaping more sustainable and robust economic policies that took into consideration resource use and the cost of pollution. These developments are not merely theoretical. Many companies are reporting significant cost savings, increase in their customer base, and are attracting investors increasingly interested by the companies with explicit ethical policies and corporate social reporting.

Nevertheless, if sustainability seems a necessity for any company that believes it has a future in the 21st century; the path towards that end remains a difficult one; it requires taking a long-term view in integrating social, environmental, and economic considerations. The balance between these factors is debated and is in desperate need for interdisciplinary expertise.

Globalization continues to be a controversial subject among economists, business leaders, and policymakers. With a focus on market expansion, it has created powerful corporations with turnovers that exceed the GNP of entire countries. While there are concerns that the growth associated with globalization is responsible for increased inequality, there are also worries about the damage such growth is doing to the environment (Kohut & Wike, 2007). Kohut and Wike noted a strong upsurge in environmental concerns throughout all continents without exception. More interestingly, people seem willing to sacrifice economic growth to secure a clean environment. In rich and poor nations alike, there is a consensus that damaging the environment is a too high price to pay for economic expansion.

In light of these trends, a few corporate leaders are beginning to question whether business as usual will ensure competitive advantage and profitability over the longer-term. They realize that future profitability also relies upon building and renewing competitive advantage through product and service innovation that takes into account customer values and

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**Figure 1:** Environmental and Social Trends as Business Opportunities (© Ecos Corporation, 2006)

### Globalization

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concerns. Sustainable development principles offer tremendous opportunities for identifying alternative market solutions for products and services, and for achieving more sustainable patterns of consumption (Lovins, 2008).

**Energy dilemma and future opportunities**

Fossil energy has fueled tremendous economic growth over the past century, but it is also the primary source of greenhouse gas emissions. As a consequence, there has been focus on improving the efficiency of energy use and to derive it from much cleaner sources. Solar power, in particular, seems to be having a sunny future. In 2002, the solar industry market in the US grew from $200 million dollars in 2002 to an estimated $2 billion dollars in 2007. Such market is already blooming in US states – their number is constantly growing – that provide rebates to consumers and low-interest loans and grants to providers. According to Green Careers Journal, solar-industry growth is expected to continue at more than 30 percent a year for the next five years. With installation prices coming down, people trained to install solar arrays and panels will be in high demand, as will be scientists and engineers who will work on improving the technology.

Wind power is another fast growing energy source in the world. According to the American Wind Energy Association (AWEA) and its European counterpart (EWEA), global wind-generating capacity increased an average of 32 percent annually between 1998 and 2003. In 2007, the U.S. wind energy industry installed more than 5,000 megawatts (MW), expanding the total wind power generating capacity by 45% in a single calendar year and injecting an investment of over $9 billion into the economy (AWEA, 2008). This strong performance is expected to continue, with AWEA’s initial estimates indicating that 2008 could equal 2007 in new wind capacity installed.

The automobile industry is also seeing the beginning of a global transformation towards higher fuel efficiency and alternative energy sources. This is not a surprise when we know that about 75% of America's petroleum use is devoted to transportation\(^2\), and most of that by road vehicles. Many studies show that there already are a few other economically competitive sources of energy; ethanol being the closet to becoming a market substitute for gasoline. On the carbon emission market front, the U.S. will witness a $1 trillion market by 2020 if policymakers continue on their current path towards a cap-and-trade program, according to an analysis by New Carbon Finance\(^3\) research economists.

**Pressure from investors and consumers**

Over the past decade, socially responsible investments have experienced an explosive growth around the world. Investors increasingly evaluate corporations on the basis of their readiness for associated risks and opportunities related to climate change. In a world that recognizes climate change as a serious threat, investors have a lot at stake and simply cannot afford to ignore it. In the US, the professionally managed assets of socially screened portfolios reached $2.3 trillion in 2003, growing by 1200% from $162 billion in 1995 (Renneboog, Horst, & Zhang, 2007). Currently, ethical assets represent about 10% of total assets under management in the US (SIF, 2005). The challenge is to know which investment screens satisfy investors and enhance the firm value, and which do not. Renneboog et al. (2007) defined screening for corporate social responsibility (CSR) as the sum of good

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\(^2\) Source: Argonne National Laboratory

\(^3\) [http://www.newcarbonfinance.com](http://www.newcarbonfinance.com)
corporate governance (protecting shareholders’ interests), environmental efficiency (protecting environmental stakeholders’ interest), and good stakeholder relations (protecting the interests of other stakeholders, including those of employees and the local community). Effort in modeling and putting metrics on these factors is an evolving research field where science intersects with ethics.

On the consumer side, recent years have seen increased pressure for companies to be more accountable for their environmental and social impacts. Consumers are interested in how companies they purchase from are conducting their business, and express their expectations through their product purchase decision. Evidence of this mounting pressure is becoming increasingly apparent, albeit not consistent across products, in manufacturing processes of both suppliers and finished goods manufacturers. When asked in surveys, a large number of consumers in OECD markets affirm that whether or not companies are committed to social responsibility is important to them (Fliess, Hyung-Jong, Dubreuil, & Agatiello, 2007). The same surveys also show that a substantial number express a willingness to pay more for products associated with acceptable environmental and labor conditions of production. Evidently, this willingness to pay depends on individual’s levels of income and other factors and has been observed to differ across countries.

Beyond the traditional focus on the sources of pollution and the various means to reduce it, there is a justified concern that any improvement in resource-efficiency through technological breakthroughs will not be sufficient to keep up with the continued growth in both the consumption of products and services, and the number of consumers. As a result, there is a growing interest in also looking at consumption as an environmental and sustainable policy domain. A sustainable consumption strategy would go beyond consumers using environmentally friendly products and would take on the risky exercise – because it threatens the perceived level of (material) wealth – of addressing the sustainability of lifestyles (Van Berkel, 2001). Van Berkel proposes to think of sustainable consumption as rephrasing the 3R paradigm from ‘Reduce, Reuse, and Recycle!’ to ‘Rethink, Redo, and Reduce!’ – rethink what our basic needs are; redo the way we use (natural) resources; and reduce the throughput of products and services for meeting these needs. This steady push by investors and consumers can be a business advantage to companies that can integrate and communicate CSR effectively, differentiating their products from those of competitors.

The Future is Green

All indicators are pointing in a sustainable future direction; and this future does not have to be grim. Already in 2005, more than five million jobs were created in the environmental industry in the US (DiPerna, Bezdek, Wendling, & Woods, 2006). In Europe, a 20 percent increase in energy efficiency is estimated to create a million new jobs. Twenty-two different sectors of the U.S. economy currently provide workers with green collar jobs – these are manual labor jobs in businesses whose products and services directly improve environmental quality – (Pinderhughes, 2007). Although green collar jobs are relatively high quality jobs with low barriers to entry not requiring higher education degrees, they provide a powerful sign as to which sectors in the economy are poised for dramatic growth. Typically, green collar jobs are estimated to pay better than the living wage standard; provide health benefits, meaningful work, and occupational mobility. Existing and emerging green job opportunities offering economic prosperity can be found in almost every economic sector including hospitality; health; energy; legal; engineering; teaching; product design; construction; social, business management, and agriculture.
In conclusion, there are many evidences that reaching a situation in which sustainability integration into economic activities is a fundamental vector of growth and development is at reach. Succeeding in such goal requires a comprehensive paradigm shift in economic, environmental, and social planning. After decades of dabbling with environmental and social issues, the economic case is sufficiently strong to motivate a call to action. This is a turning point for the world capitalist economy, with critical choices and responsibilities facing governments, business leaders, and each citizen individually; the role of education is central in this colossal project. The exponential surge of interest in sustainability is prompting educational establishments to respond by offering the courses and training that match a fast growing marketplace. If both public and private sectors are starting to acknowledge the prominent role of the environment in future economic growth, they are also admitting lacking a conceptual framework that allows them to integrate the environment into their decision making. Graduates are increasingly exposed to notions of sustainability, which are emotionally, politically, ethically, and scientifically charged (Corcoran & Wals, 2004). They must be able to deal with conflicting norms and values, a wide range of stakeholders – and not only shareholders – and a constantly evolving knowledge base. At the same time they will need to be able to contextualize knowledge in an increasingly globalized society. The complexity of the task ahead requires a new generation of higher education graduates with more cross-discipline skills and systems thinking capacities.

The role of higher education in sustainable development

Through the provision of education, research, and innovation, colleges and universities have always in the past contributed to the advancement of society and public well-being. They already have been instrumental in uncovering the current environmental crisis facing the world. Often on the vanguard of ecological movements, scientists and researchers have helped bringing environmental issues to the fore of the agenda of the United Nations and the international community. Yet, there is an inexplicable slowness on the part of many higher education institutions in the United States and abroad to make environmental and its interrelated issues a priority in curricula, research, and operations. This is the more surprising given the complexity of the challenge and the sense of urgency in facing it. Higher education must take a leadership role in addressing sustainability challenges as it did, and continues to do, in public health and high technology. Higher education plays a critical role in creating and disseminating the knowledge and values for society, that are much needed in a situation where technology alone cannot provide all the answers. It has a unique position – relatively independent of political pressures – and the critical mass with a diversity of skills to develop new ideas; to comment on society and its challenges; and to engage in bold experimentation in sustainable living (Cortese, 2003). It is able to prepare most of the professionals who will develop, lead, manage, teach, work in and influence society's institutions to put them on the path towards sustainability. With such pivotal role, higher education is well poised to make the vision of a sustainable future become reality. As Balderston (1995) wrote:

The university is the ‘information and learning organization’ par excellence, society's main repository of systematic knowledge and its main contributor to tomorrow's scientific and humanistic understanding.

A keyword in Balderston’s statement is “tomorrow”. The university, and higher education in general, is not only at the core of the social fabric and an expression of its present values, but it also is of an important influence toward the future of human kind.
In addition, higher education as an industry is an important economic engine. In 1999, there were approximately 4,100 higher education institutions in the United States, with a total of 14.6 million students; 2.3 million degrees were conferred. The annual operational budgets of those institutions are $200 billion – greater than the GDP of all but twenty countries in the world. Their endowment is over $230 billion.

**Historical background**

The notion of sustainable development in higher education goes back to the 1960s. It has been given international support at the United Nations Conference on the Human Environment held in Stockholm in 1972. This was the first major conference on international environmental issues, and marked a turning point in the development of international environmental politics (Baylis & Smith, 2005). Two major conferences followed afterward and were hosted by the newly formed UNESCO-UNEP International Environmental Education Programme: The first held in Belgrade, 1975 achieved drafting the concepts of and a vision for environmental education. The second, an Intergovernmental Conference on Environmental Education, held in Tbilisi, 1977 formally approved the scope and action plans put forward from the previous conference. Since then, a number of national and international declarations relating to sustainability in higher education were drafted; the Lüneburg Declaration on Higher Education for Sustainable Development4 being among the latest adopted in October 2001 and endorsed by many universities around the world. The international character of these early initiatives, albeit focusing on environmental aspects, underscores the early importance given to sustainability by scientists and the need for a worldwide program of change based on long-term considerations, strategies for solving environmental problems, and opportunities for co-operation between nations.

In recent years, a better understanding of sustainability concepts has established that these need to incorporate three dimensions: environmental, economic, and social development. Consequently, sustainable development was no longer synonymous with environmental protection. The ecological question of resource management was no longer treated in isolation, but has become integrated as an important part of the comprehensive question of societal development (Posch & Steiner, 2006).

**An integrative approach**

At the dawn of the 21st century, we’re witnessing a confluence of environmental, economic, social, and political forces that pose serious new challenges to society and to its future. Every area of life is going to have to change if sustainability is to come about and, therefore, every discipline has to be involved in the process of moving to a more sustainable future. Advocates for sustainability in higher education are increasingly demanding radical changes in colleges and universities. Cortese (2003) explains that to reach a sustainable future, institutions of higher education must provide the awareness, knowledge, skills, and values that equip individuals to pursue life goals in a manner that enhances and sustains human and non-human well-being. Simply adding a few courses on environmental issues and sustainability is not enough for a paradigm shift to happen. The U.S. experience suggests that education for sustainable development is perceived as irrelevant for other students outside of the environmental fields. In Sweden, consensus is building around the idea that sustainability education is important because it helps mobilize society outside of the university. Swedish

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4 On the occasion of the International COPERNICUS Conference “Higher Education for Sustainability – Towards the World Summit on Sustainable Development (Rio+10)”
society is demanding the application of sustainability in every day life, and it is the ultimate directive of universities to produce students that have the knowledge and skills to meet this demand. Advocates are calling for a fundamental rethinking of how institutions of higher education educate students, conduct research, interact with local communities and ecosystems, operate their campuses, and provide a model for other social institutions (Shriberg, 2002). Tomorrow’s problems require the university to become a mixture of institution, enterprise, and governmental agency. This is because it will need to assemble a broad range of activities and operations. In Kofi Annan’s words,

*By now we know that peace and prosperity cannot be achieved without partnerships involving Governments, international organizations, the business community and civil society. In today's world, we depend on each other.*

Another example of interdependence is in the fact that war economies as well as local-level conflicts can be closely connected to issues relating to natural resources. Tensions can arise or worsen over the lack of availability of or access to natural resources (OECD, 2005). Cortese (2003) explores how higher education would model sustainability as a fully integrated community intricately connecting learning, research, operations, purchasing investments, and work with local and regional communities (Figure 2). The envisioned framework for higher education will result in the interdisciplinary, systemic learning and practice needed to provide the educational experience for graduates to lead society on a sustainable path.

![Diagram](https://example.com/diagram.png)

**Figure 2:** Higher Education Modeling Sustainability as a Fully Integrated System source: (Cortese, 2003)

**Role of business education in sustainable management**

Business education is poised to play a major role in the sustainability revolution. With more than 16% of total graduate enrollment in the United States, Master of Business Administration (MBA) programs are second only to education as the most popular field of graduate study (Redd, 2006). In 2003, there were about 350,000 graduate students in business and management programs in the US, with 129,000 MBAs awarded in the same year (LeClair, 2006). Moreover, business leaders, especially in the US, which did not sign the

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5 Text of Secretary-General Kofi Annan's address, entitled "Markets for a Better World", delivered on the January 31, 1998 at the World Economic Forum, Davos, Switzerland
Kyoto protocol, are choosing to move forward and are promoting their sustainability strategies with guiding principles that support their mission statement (Edwards, 2005). Since business schools are the primary training ground for future managers, there is a market push to have business schools teach how to integrate business and the environment so that their graduates are better equipped when they enter the workforce.

On the supply side, MBA courses on topics such as social entrepreneurship have exploded in the past few years according to Rich Leimsider, senior associate at the Aspen Institute (Said, 2007); Leimsider to add that student interest in sustainability issues has skyrocketed. Five years ago, his site received a few hundred visits a month from prospective MBA students researching social-emphasis courses at various schools. Now there are 15,000 to 20,000 visits a month. And yet in 2006, WorldWatch Institute indicated that there were only four business schools in the US that focused on integrating sustainability in the DNA of their curriculum. These business schools address the three broad components of sustainability; often described as “people, planet and profits”. The need for businesses to address all three aspects has been encapsulated in the concept of the “integrated bottom line” (Hawken, Lovins, & Lovins, 1999).

Globally, much more is required for educating a next generation of business leaders who need to learn having more than just profit and shareholders wealth on their minds. As mentioned previously, calls to lessen pressure on resources, improve management of environmental risks, and increase the social equity of business practices are on the rise. This is underpinned by an increased consumer awareness of environmental and social issues, which will continue to influence actions of corporations, governments, and non-profits.

Traditional and emerging disciplines

The importance of higher education, particularly in Science and Engineering is widely recognized around the world for its impact on innovation and economic development. In the quest for a sustainable future, technology remains a central area for research and innovation. Technological solutions will buy society time until it adapts to a new mindset and will also provide us with the necessary support to soften this shift. Looking at the transportation industry for example, about 50% of all the fossil energy used is taken by the transportation system. Yet, these resources remain a must in an increasingly globalized world where people travel more than ever for business or leisure. Current and next generation scientists need to continue their effort in looking for alternatives such as renewable sources like wind, solar, and other systems which have not been explored yet.

Other emerging disciplines, directly related to sustainability are starting to appear in a few universities around the world. The most popular is ecological economics which seeks to ground economic thinking in the dual realities and constraints of our biophysical and moral environments. This relatively young discipline must go well beyond the fusion of ecology and economics alone (Daly & Farley, 2004). The sustainability challenge requires a set of complex frameworks and tools from social sciences, natural sciences, political sciences, and humanities. Daly and Farley go further in their definition by proposing a new field of research in which disciplinary boundaries are only academic constructs irrelevant outside of the university. In such context, it is the problem being studied which will determine the appropriate set of tools, and not the opposite.

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6 http://www.worldwatch.org
Social and cultural development

Sustainability is about sustaining our society and its people. It is therefore logical to consider that the challenge of sustainability is all about human beings. There is a growing acceptance that for positive and ongoing – sustainable – change to occur among economically marginalized groups or nations, development has to be participatory, locally driven and culturally specific (Holcombe, 2006). If universities were to contribute positively towards this goal, the biggest challenge would involve the acceptance of alternative ways of seeing problems and solutions under various local contexts or cultures. For academics, it would mean a paradigm shift and the acceptance of systemic, yet local, ways of analyzing a problem, identifying a solution, and helping implementing it. It means lending support to efforts to reclaim local knowledge and philosophies that are culturally inclusive and sustainable (Thaman, 2002). It also means for Thaman incorporating local and indigenous knowledge, and processes in the university research and teaching agenda. Given the current belief in western superiority in most disciplines, this is probably one of the most challenging educational imperative for the twenty first century.

Conclusion

Transforming the world and its economy to a sustainable basis has emerged as the most pressing challenge of the twenty first century. This sustainability quest challenges universities around the world to rethink their missions and to re-structure their courses, research programs, and life on campus. Despite our reluctance to swiftly address environmental, social, and economic issues, we are making progress in understanding how to create a sustainable future, both theoretically and practically. The emerging consensus among political, business, and society leaders is that we must change the economic bottom line to value full human development in healthy ecosystems; we must eliminate subsidies for unsustainable practices; 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 (Dernbach, 2002).

There is no doubt that higher education must be among the most prominent players in moving society to a more sustainable path. The academy has in the past played a pivotal role in the theoretical debates and practical experimentations concerning the best route to take. Higher education is vested by society with the mission of discerning truth, imparting knowledge, skills and values and preparing responsible citizens and competent workers who will contribute to an improving world (Corcoran & Wals, 2004). Through their learning experience, future graduates would embrace interdisciplinary strategies and systems thinking approach to address sustainability issues.
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