

HIGHER EDUCATION FOR SUSTAINABLE DEVELOPMENT

Final Report of International Action Research Project

Based on research carried out by Dr. Andy Johnston, seconded to the OECD from Forum for the Future, in October 2006 – March 2007



Forum for the Future is a charity committed to sustainable development and focuses on the root causes and connections between big issues such as climate change, social inequality and environmental degradation. Forum for the Future takes a practical, solutions-based approach and concentrates on key sectors including the built environment, finance, retail, transport, tourism, the public sector and cities, with the long-term goal of transforming each sector.



The Organisation for Economic Co-operation and Development (OECD) is a unique forum that brings together the governments of countries committed to democracy and the market economy from around the world to address the economic, social and governance challenges of globalisation. The Organisation provides a setting where governments compare policy experiences, seek answers to common problems, identify good practice and coordinate domestic and international policies.

The OECD is engaged in key policy issues concerning education. Work on education at the OECD seeks to develop and review policies to enhance the efficiency and effectiveness of education provisions and the equity with which their benefits are shared. It focuses on how to evaluate and improve outcomes of education, to promote quality teaching and to build social cohesion through education.



The Programme on Institutional Management in Higher Education (IMHE), within the OECD Directorate for Education, focuses on a wide range of cross-cutting issues, addressing key challenges faced by OECD member countries in the field of higher education. IMHE provides strategic analysis and advice on institutional leadership, management, research and innovation in a global knowledge economy, and reform and governance in higher education.



The OECD Centre for Effective Learning Environments (CELE) promotes the exchange and analysis of policy, research and experiences in all matters related to educational building. The Centre works to improve the quality and suitability of educational buildings; ensure that the best use is made of the resources devoted to planning, building, running and maintaining educational buildings; and identify the impact on educational building of trends in education.

Executive Summary

The Brundtland Commission defined sustainable development as a pattern of resource use that “meets the needs of the present without compromising the ability of future generations to meet their own needs.” In order to preserve the natural world, economic, social and environmental factors must be jointly considered and harmonised. Formal and informal learning, through raising awareness and influencing behaviour, has a pivotal function if sustainable development is to be achieved. This role is especially pronounced in the realm of higher education (HE) because at this level students are being prepared to enter the labour market and emerge with skills to support green economies and as messengers of ideas.

Progressively, universities and other higher education institutions (HEIs) have been incorporating sustainable development values and practices into their core activities of teaching and research, institutional management and operational systems. However, the debate thus far has focused primarily on the rationale and reasoning for why sustainable development needs broad adoption. The international discussion, however, has failed to specify the various actions that higher education institutions can adopt.

The work undertaken in this report aims to disentangle the performance of higher education institutions by surveying the practices of fifteen institutions. A set of case studies is presented to demonstrate how organisations are approaching sustainable development through natural resource reduction, innovative teaching practices and curriculums, research and consultancy, building maintenance, alternative transport and financial management. The approach to embedding these functions has varied amongst higher education institutions with strategies based on already established frameworks and models, while other institutions have developed implementation frameworks specifically emphasising the elements that are most important to the HE environment and campus, such as focusing on research or didactic methods.

A visioning exercise was carried out with eleven of the higher education institutions to evaluate how each envisioned its ideal contribution to sustainable development. The written visioning statements presented the institutions, explained what they planned to achieve and how each would advance the designed plan.

The end of the report suggests further areas of study and policy implications for policy makers and HE leaders and managers who wish to mobilise HEIs for sustainable development.

The research reported here predates the OECD member countries agreement on developing a green growth strategy, yet the findings are pertinent to it. The green growth strategy acknowledges the need to adjust student training and skills to meet changing labour demands and policies, as well as the need to re-orient research and development for new technologies and innovations.

INTRODUCTION TO THE REPORT

This is the final report of an international action research project ‘Higher Education for Sustainable Development’ (HE4SD). The research project was undertaken by Dr Andy Johnston, a sustainable development academic and practitioner who led the education work at Forum for the Future, a UK sustainable development organisation (<http://www.forumforthefuture.org>). Forum for the Future had run a three year project called the Higher Education Partnership for Sustainability (HEPS) and developed a reporting framework for HEIs. The HEPS reporting framework is in Annex 4. The Programme on Institutional Management in Higher Education (IMHE) and the Centre for Effective Learning Environments (CELE), both at the OECD, provided research support to help determine whether the framework could be applied internationally.

The research set out to establish an up to date picture of higher education’s engagement with sustainable development in a range of 15 HEIs in 12 OECD countries across the world, and to make informed suggestions as to how higher education can maximise its contribution to sustainable development given different national contexts. The 15 HEIs involved in the research were from Europe, Asia, North America and Australasia. To recruit HEIs to the project, an announcement was made to IMHE members, and subsequently publicised on international networks at UNESCO’s Decade of Education for Sustainable Development and the International Association of Universities seeking voluntary participation. Those HEIs willing to participate expressed interest, and selection was initially limited to one HEI per member country. Most countries only yielded one offer, however several HEIs in the USA and Mexico enthusiastically wanted to engage in the project. In total, three HEIs from Mexico and two HEIs from the USA took part in the research. All fifteen institutions responded to a questionnaire about their contribution to environmental, educational, economic and social sustainable development. Eleven of the HEIs also participated in a workshop to develop a visioning statement.

The report begins by defining sustainable development and why it is significant for higher education to make a contribution, and then describes current good practice and where policies could be moving in ten years time. Examples of implementation are given, including the challenges and opportunities revealed by the study. Finally, the paper offers areas of further study to enhance policy and implementation.

The suggestions in this report are relevant for different audiences but will be of primary interest to executive education decision-making bodies of different countries. This report illustrates that a holistic coherent approach to sustainable development in higher education is possible across OECD member countries. It is hoped that knowing this will give confidence to policy makers, HEI leaders and managers, staff and students to make progress in economic, social and environmental sustainable development implementation.

The research reported here predates the OECD member countries agreement on developing a green growth strategy, yet the findings are pertinent to it. The “Green Growth Declaration” agreed to by all 31 OECD member countries plus Estonia, Israel and Slovenia in 2009, commits countries to pursue environmentally and socially sustainable strategies for economic growth. The Declaration not only encourages green investment and sustainable management of natural resources, but also promotes domestic policy reform to avoid or remove environmentally harmful policies. This commitment also recognises that economic growth can be achieved using cleaner technologies and maintaining low-carbon emissions. This is relevant to the education sector, especially higher education, because of its

role in increasing familiarity with sustainable development concepts and to accentuate areas for research and development.

AIM AND OBJECTIVES OF HIGHER EDUCATION FOR SUSTAINABLE DEVELOPMENT (HE4SD)

The principal aim of this study was to establish how higher education in different national educational systems can optimise contributions to sustainable development

Objectives:

- To identify and communicate good practice case studies in HEI teaching and research, community relations and institutional management.
- To develop visions of higher education and to optimise its contribution to sustainable development.
- To look at areas where policy solutions may be needed to support higher education's contribution to sustainable development.

Box 1. Participating HEIs

Participating countries are listed in alphabetical order, according to OECD Membership status. Starred (*) HEIs are those that participated in both the questionnaire and the visioning workshop.

Australia

* University of the Sunshine Coast

Austria

* University of Graz

Canada

University of British Columbia

Denmark

*University of Copenhagen

Finland

* Turku University of Applied Sciences

Ireland

* Tipperary Institute

Japan

* Hosei University

Mexico

* Autonomous University of San Luis Potosi

Institute of Technology Sonora

* University of Veracruz

Spain

* Universitat Politecnica de Catalunya

Sweden

* Chalmers University of Technology

United Kingdom

University of Plymouth

United States of America

Oberlin College

* Portland State University

DEFINING SUSTAINABLE DEVELOPMENT

The term ‘sustainable development’ became prominent after the Rio Earth Summit in 1992 which prioritised global environmental discussions and improved upon the initial framework introduced at the United Nations Conference on the Human Environment, Stockholm in 1972. The resulting Rio Declaration on Environment and Development, however, advocated the role of education in preventing ecological degradation (Cleveland & Kubiszewski, 2007). There are many definitions of the term ‘sustainable development’, but the most widely accepted is the one used in the publication ‘Our Common Future’, sometimes referred to as the Brundtland definition:

“Development which meets the needs of the current generation without compromising the ability of future generations to meet their needs” (UN, 1989).

This definition has the advantage of describing a future that all countries could engage with, but the disadvantage of vagueness and contestability. Furthermore, as the definition is not instructive, a universal model of sustainability and sustainable development application has not yet been developed. In order to implement sustainable development, it became necessary to develop the ideas further in terms of defining what sustainable means and the relevance of development and distinguishing it from environmental education. For this report, sustainability is understood as the end state and sustainable development is understood as the process of getting there.

An additional challenge was how to unpack the elements of a new type of development. Environmentalists and researchers recognised, though, that development patterns were harming the environment and that social problems were emerging. In an attempt to address these imbalances, a variety of models and frameworks were created to identify priority areas in sustainable development and ways to achieve progress by identifying economic, social and environmental goals. These three elements compose the three pillars of sustainable development, also identified at the Rio Earth Summit, as a means to clarify the definition of sustainable development and its application. Each one of the three pillars carries similar importance in creating and maintaining stability and balance. People, the planet and profits are all inextricably linked and interdependent, and must therefore be synchronised accordingly. The following models and frameworks provide feasible and understandable ways to co-ordinate the three pillars of sustainable development.

The Triple Bottom Line

The initial, most basic model of sustainable development to evolve is referred to as the *Triple Bottom Line* (Elkington, 1994). The idea is that at the organisational level where once there was only one bottom line – finance, now there should be two others: social and environmental. The *Triple Bottom Line* is conceptually easy to grasp, but very hard to deliver in reality, as it is still vague and offers no prescriptive solutions. This model can be adapted and modified, by adding other areas of consideration. The *Triple Bottom Line plus* may also include culture, ethics, equality, equity, social responsibility, politics and future generations in addition to economic, social and environmental factors. The *Triple Bottom Line* model is a useful entry point for sustainable development since it is simple and relatively non-controversial. Although it has less utility when used to develop implementation plans.

The Natural Step Model

The next generation of sustainability models tried to integrate decision making frameworks to help people make the right choices. Using a scientific approach, *the Natural Step* used the emerging theory of systems thinking to help generate an applicable model to limit human action affecting changes in nature (Robért, 1991). The world was conceived as a complex system with four dominant system conditions.

In the sustainable society, nature is not subject to systematically increasing:

1. concentrations of substances extracted from the Earth's crust;
2. concentrations of substances produced by society;
3. degradation by physical means; and, in that society;
4. people are not subject to conditions that systematically undermine their capacity to meet their needs.

These four system conditions can be more concretely translated into the principles of sustainability. So that to become a sustainable society, we must eliminate our contribution to:

1. the progressive buildup of substances extracted from the Earth's crust (for example, heavy metals and fossil fuels);
2. the progressive buildup of chemicals and compounds produced by society (for example, dioxins, PCBs, and DDT);
3. the progressive physical degradation and destruction of nature and natural processes (for example, over harvesting forests and paving over critical wildlife habitat); and
4. conditions that undermine people's capacity to meet their basic human needs (for example, unsafe working conditions and not enough pay to live on).

This approach focuses on society's interactions with the Earth. Since its introduction, corporations and businesses have adopted these principles to manage resources and to become more sustainable. However, this is an incomplete model as it focuses substantially on the environment, yet fails to adequately address the other components of sustainability.

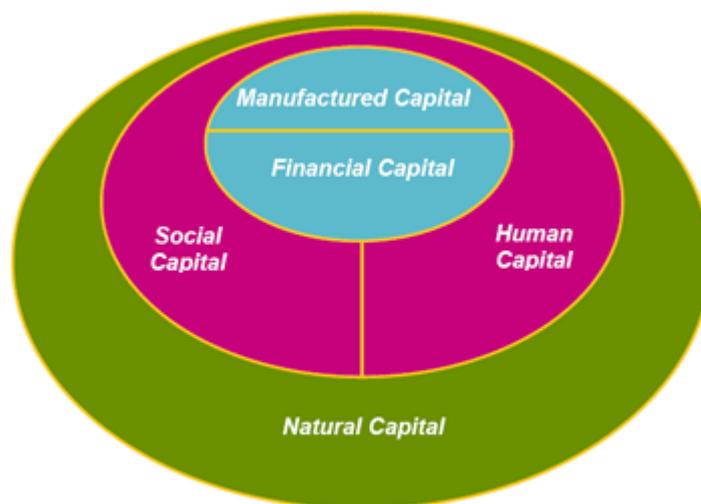
Five Capitals Model

A third model has surfaced using economics as the starting point. The *Five Capitals Model* maintains that any government or organisation has five capitals or stocks to manage: natural, social, human, financial and manufactured (Porrirt, 2005). Each of these capitals can be defined and the stocks evaluated, using the chart below.

Five Capital model of the economy

Capital/Resource	Stock	Flow
<i>Natural</i>	Land, sea, air, vegetation, ecological systems	Food, water, energy, waste, disposal, climate
<i>Human</i>	Knowledge, skills, health, motivation, spiritual ease	Happiness, creativity, innovation, work, energy, participation
<i>Social</i>	Families, communities, organisations, governance systems, schools	Security, shared goods (e.g., culture, education) inclusion, justice
<i>Manufactured</i>	Infrastructure, roads, buildings, tools, fixed assets	Living/working space, access, distribution
<i>Financial</i>	Money, stocks, bonds, banknotes	Means of valuing, owning or exchanging other four capitals

Source: Forum for the Future



Source: Forum for the Future

Sustainability, following the logic of the *Five Capitals Model*, is achievable if we lived from the flows of benefits that the stocks provide rather than eroding the stock.

I=PCT

Another model inspired by economics is the formula: *Impact = Population * Consumption/person * Impact/unit of consumption (I = PCT)*. This model has the advantage of focusing attention on the impact of consumption and it is very simple to use and communicate. However, similar to the *Natural Step* it emphasises environmental management, and plays down social and economic development.

Additional resources on good practice can be found through the Global Reporting Initiative, which provides a reporting framework for companies and organisations that promote Corporate Social Responsibility, using guidelines drafted from a network of stakeholders (Global Reporting Initiative,

2006). Participants can select core and additional indicators based on their sector to incorporate sustainable management. The framework emphasises transparency, accountability, reporting and sustainability.

Any of these models can be adapted or combined and applied to the sustainable management and operation of HEIs. The underlying objective of any framework should strive to harmonise economic, social and environmental tasks.

While the work on developing sustainability models has progressed, the UN and other global institutions have been putting together policy initiatives that deal with sectors or issues. For example, the Kyoto Treaty on Climate Change, the UN Decade of Education for Sustainable Development and the Millennium Development Goals all address incorporation of sustainable development themes as part of overall policy objectives. Despite the increased sophistication of these models and the globalisation of higher education there is still little agreement about how higher education could best contribute to global sustainable development through its teaching and research, institutional management, building and various operational activities such as purchasing.

Higher education institutions and sustainable development

As noted earlier, the concept of sustainable development was originally introduced at the first Earth Summit in 1972 in Stockholm. During this meeting of government representatives and non-governmental organisations, education was identified as fundamental to the successful achievement of sustainable development, and a point that has been reiterated by numerous governments and practitioners in the intervening years. Since then, progress has been variable and generally unsatisfactory. However, a badly needed injection of urgency was administered in 2005, when the UN adopted a Decade of Education for Sustainable Development (DESD) (UNESCO, 2005). The goal of the DESD is to: “integrate the principles, values, and practices of sustainable development into all aspects of education and learning.” The idea being that, such an input will “encourage changes in behaviour that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations.” Recognising that human behaviour can be altered to limit harmful effects on the environment, sustainable development philosophy has evolved to include more than just recycling and constructing buildings with solar panels, but encompasses how individuals and communities behave and interact with the Earth.

The DESD covers all levels of formal and informal education, but for this study formal higher education is chosen as the level of interest because of its influence on graduates who go on to become leaders in their communities, organisations and countries. For this reason, it is considered fundamental to the strategy for achieving sustainability.

UNESCO (2004) identifies two unique opportunities for HEIs to engage in sustainable development. First, “Universities form a link between knowledge generation and transfer of knowledge to society for their entry into the labour market. Such preparation includes education of teachers, who play the most important role in providing education at both primary and secondary levels. Second, they actively contribute to the societal development through outreach and service to society.” Cortese (2003) seconds this notion, stating “Higher education institutions bear a profound, moral responsibility to increase the awareness, knowledge, skills, and values needed to create a just and sustainable future. Higher education often plays a critical but often overlooked role in making this vision a reality. It prepares most of the professionals who develop, lead, manage, teach, work in, and influence society’s institutions.” Thus, HEIs have a critical and tangible role in developing the principles, qualities and awareness not only needed to perpetuate the sustainable development philosophy, but to improve upon its delivery.

In response to this responsibility there have been several attempts at securing commitment from institutional managers. Probably best known is the Talloires Declaration, an international agreement signed by over 350 university presidents in over 40 countries to take actions to implement sustainable practices into their respective institutions, reverse environmental damage, reorient research activities and enhance outreach in colleges and universities (ULSF, 1990). In addition, the American College & University Presidents Climate Commitment asks individual presidents to take steps toward institutional plans to reduce carbon emissions and adopt energy efficiency policies, as well as report their progress (ACUPCC, 2007). Other programmes include the International Sustainable Campus Network and the Global Higher Education Sustainability Partnership (GHESP), which provide forums for institutions to exchange good practices and improve current practices (ISCN, 2007; GHESP, 2004). The Baltic 21 has also highlighted the role of education as a means to achieve broader objectives on sustainable development (Baltic 21, 2004). While these are positive steps to creating green campuses, curriculums and communities, what is absent is a systematic approach to embedding sustainability.

Focusing on the strength of partnerships and being sensitive to the regional differences in understanding of education for sustainable development, the UN has asked global regions to coordinate and develop strategies: Asia-Pacific Region, Latin America and Caribbean Region, Europe-North America, Arab States and Africa (UNESCO, 2005). Regional strategies allow for broader participation and adaptability of the principles to local concerns and culture while also including indigenous knowledge to teach. Although these regions have developed strategies attenuated to desertification, poverty alleviation, biodiversity and awareness campaigns adapted to the region, streamlined progress has been disappointing.

A fundamental part of the subsequent regional strategies for Europe/North America, Australia/Asia and Africa was the requirement to develop national education for sustainable development policies. Some countries like the UK and the Netherlands already had these in place but for others, the call to develop such a strategy stimulated new activity.

Rather than providing a definitive list of actions and approaches to sustainable development incorporation in higher education institutions, this report aims to outline the various strategies of how HEIs are developing institutional approaches to incorporate the values and opportunities for sustainable development. It will demonstrate that by examining the various functions and operations of a university, HEIs can develop far-reaching policies that give consideration to teaching and research, infrastructure, course content, biodiversity, the local and regional community, purchasing practices and waste management.

HOW HIGHER EDUCATION INSTITUTIONS ARE ADDRESSING SUSTAINABLE DEVELOPMENT

Questionnaire

The 12 Features of a sustainable society (Annex 1) is an analytical framework developed and used by Forum for the Future (2003) to describe sustainable practices of an organisation, and are arranged according to the five capitals model. The self-evaluation questionnaire (Annex 2) was adapted from the statements of the 12 Features of a sustainable society and designed to identify the strategies, policies, plans and practices being pursued by higher education institutions that make contributions to sustainable development. It provides a detailed level of analysis into the way in which the institution contributes to different aspects of sustainability by asking a series of questions. It can be adapted for use in different circumstances or organisations and is appropriate for higher education. The questionnaire aimed to be neutral and broad to allow flexibility in the HEIs responses about institutional practices and activities. This framework attempts to describe a sustainable world as a set of outcomes, which is useful because it focuses analysis on positive outcomes, as opposed to only thinking about inputs.

Each participating HEI received the questionnaire (Annex 2) containing 12 questions about their contribution to sustainable development (covering environmental, social and economic factors) with a final question on barriers, opportunities and policy suggestions. The responses to the questionnaire revealed that there is a varied amount of sustainability activity in those HEIs who have sought to engage in economically viable, socially just and environmentally balanced activities.

Box 2. Case studies

The case studies show that HEIs are concerned with more than simply limiting carbon footprints, and that institutions are engaging in creative and resourceful ways to change learning and limit environmental impact.

The case studies have been arranged according to a sustainability appraisal grid (Annex 5). Referencing the various functions of the HEI, this model was chosen because it is easily adapted for institutional management and organises the outcomes according to the functions of the institution (as a business, as a place of learning and research and as a key member of the community), as well as by the five capitals. Employing a specific model enables comparisons over time and across institutions by providing a common standard of measurement for sustainability in higher education. There are inevitably intersections between categories, but HE practices and activities have been grouped according to which function they most effectively fulfil. These case studies illustrate the seemingly limitless possibilities available for HEIs to engage in sustainable development. From transport policies to procurement policies to resource conservation efforts and waste management, the surveyed universities are creatively responding to the economic, social and environmental challenges posed by sustainable development theory.

1. Using resources efficiently

Examples: reduce energy and raw material use; drive waste out of the system

Universitat Politecnica de Catalunya (UPC), Spain – targeted waste reduction early on and recruited an environmental team to raise awareness and to tackle consumption of resources such as energy, water and paper. By reinvesting the savings generated, UPC was able to establish the interdisciplinary centre for technology, innovation and education for sustainability (CITIES) and expend more resources into sustainability activities. The environmental management system also launched waste reduction campaigns.

Institute of Technology Sonora (ITSON), Mexico – ran a programme on environmental culture, which aimed to

reduce the use of energy, water, paper and other non-renewable resources. It employed the Balanced Scorecard methodology and practices the three R's of waste management: reduce, reuse, and recycle. To ensure achievement in resource management, a system of measurement was used to control resource use. Resource management also extended into the grounds maintenance and to conserve water. As a result the landscape is being converted into 'green gardens' which are low maintenance and drought tolerant.

2. Developing the new economy

Examples: exploit teaching, research, business development opportunities in low-carbon, high human creativity economy

Turku University of Applied Sciences, Finland – developed, as the first HEI in Finland, a Corporate Social Responsibility Strategy and systemically reports about its socially responsible behaviour to its shareholders and the wider public, following the GRI guidelines. Its first CSR report gained national recognition by winning the best public sector CSR report. Underlying the institution's CSR strategy is the HEI's need to strengthen institutional accountability to its key stakeholders by making transparent and understandable its wide-ranging operations and activities, and the impact of these activities to the local and regional economy and society, as well as the HE staff and students hence increasing the attractiveness of the institution as an employer. In addition, the goal has spread the idea of socially responsible behaviour to public and private sector organisations and to improve its stakeholder collaboration. Some elements of the programme have been incorporated into course design, such as business and management. The HEI also has a degree programme in Sustainable Development with an annual intake of 25 students. Students who undertake work based learning periods in public and private sector and graduates disseminate the ideas and practices of sustainability and Corporate Social Responsibility strategy to the world of work in local enterprises, public sector organizations and NGOs.

Oberlin College, USA – provided a course in Environmental Economics. The college puts this dedication to valuing natural capital into practice in many ways, with the most direct example of this being the college's decision to purchase 60% of its electricity from green sources. In June of 2004, the college signed an agreement at \$2 per MWh to purchase an estimated 13,000 MWh per year in green attributes from the local utility, Oberlin Municipal Light and Power. The college purchased all of the green attributes that the utility had available at the time, and the college is currently undergoing negotiations to increase that amount if possible. Based on a carbon inventory of Oberlin College completed by the Rocky Mountain Institute in 2002, the purchase of these green attributes should off-set approximately one quarter of Oberlin's carbon emissions – amounting to about a 12,600 ton reduction in carbon emissions.

3. Conserving and enhancing the environment

Examples: subscribe to low-impact travel schemes; - increase biological mass and diversity (on campus and locally)

Portland State University (PSU), USA – Transportation and Parking Services (TAPS) has developed a comprehensive, cost-effective alternative to driving. Alternative transportation options for car pooling and cycling are subsidised through ever-increasing parking fees to automobile users. Excess funds from parking pass fees are also used to cover half the cost of public transit passes. Car-pooling, use of public transport and other forms of alternative transportation contribute to reductions in air pollution and consumption of resources, and decrease the demand to develop land for parking. TAPS also maintains 450 bicycle racks and lockers around campus and co-ordinates the *Bike Co-op*, where members can purchase parts and make repairs to bicycles.

University of Copenhagen (UC), Denmark – maintains three botanical gardens in Denmark which comprise important scientific collections, provide research subjects and laboratories for students, and promote knowledge of conservation work through exhibitions, displays and interpretation.

University of the Sunshine Coast, Australia – maintains part of Fraser Island as a site for natural environment preservation, educational pursuits and scientific research. The island comprises a complex ecosystem of sand dunes, lakes and subtropical forests that grow solely on sand, and exemplifies biological and geological processes. The research facilities hold a well-equipped, open-plan teaching room, a laboratory for basic environmental research, refrigerator and freezer rooms, a small office and library, a specimen receiving deck, and accommodation for researchers and graduate students. Fraser Island provides an atmosphere that encourages environmental enthusiasts and researchers to make use of its facilities and provides resources for field study sites

for primary, secondary and tertiary student groups to learn more.

4. Attracting and retaining high caliber staff and students

Examples: create community of purpose for staff, students, other stakeholders; be values led organisation; ensure healthy working culture and physical environment; be active on diversity

Chalmers University of Technology, Sweden – has formulated programmes to ensure healthy lifestyles for its faculty and staff. Both Faculty and Staff are offered some keep-fit activities (and financial support if they choose one of their own). There is an agreement with an occupational health service for ergonomic and psychosocial advice and medical examination. Free medical treatment is offered to all staff and medical costs are reimbursed. There are yearly updated action plans for occupational health, rehabilitation, psycho-social occupational environment, handling of drug addiction (including alcohol), crises, and gender equity/harassment. Staff have a subsidised keep fit programme worth 100 Euros pa.

Keeping with current legislation that prohibits smoking in public buildings, the HEI conforms to the law and smoking is not allowed in any of the buildings. Pets are not allowed in any of the buildings. There are safety instructions for the Labs and for electrical work, for handling hazardous waste. These questions are handled by the personnel department.

5. Providing quality student experience

Examples: be a values led organization; ensure healthy working culture and physical environment; enhance employability of graduates; ensure sustainable literacy for all

University of Plymouth, UK – had a strategy of personal development and employability for all graduates. The 'Skills Plus' programme commits the University to nurturing sustainability literate graduates and prepares students for future employment and citizenship through the development of Graduate Attributes and Skills (including social skills).

Chalmers University of Technology, Sweden – offered open lectures to incoming undergraduate and graduate students on sustainable development and their role. Additionally, learning about sustainability has been integrated into master's level engineering and architecture programmes. And all students are required to take one compulsory course in Environment and Sustainable Development. Courses are available in the different disciplines, which allow students choice in how to fill the requirement

6. Promoting lifelong learning

Examples: mix on/off campus learning experiences for both students and community; clear learner paths in and out of higher education – from school, further education, work, non-working

Hosei University, Japan – ran a comprehensive set of educational programmes which enable life-long learning and several courses that engage directly with the local community on issues relevant to them. The courses were adapted to exploit student expertise in an effort to help local enterprises.

7. Fostering governance and management

Examples: ensure clarity and coherence in strategic planning and well trained managers; modernise charters, decision-making systems to ensure transparency and democracy

Portland State University, USA – the student government group is the Associated Students of Portland State University, which advocates for and represents the interests of the students of the Portland State University before internal and external bodies, including providing for student representation and participation on university committees. The ASPSU has provided a formal means of communication and interaction among students, student organizations, faculty and the university administration, as well as providing for students to participate fully in the allocation of student incidental fees as provided in Oregon statutes and the Administrative Rules of the State Board of Higher Education.

8. Anticipating future markets for graduates

Examples: articulate and meet 21st century challenges through teaching, research, knowledge transfer; promote a vision of the future that engages new generations; prepare graduates for multi-disciplinary approaches to problem solving

Autonomous University of San Luis Potosi, Mexico – established the PROSAC research project is linking pollution and health issues by using interdisciplinary research to build the capacity of local communities. The project also aims to create NGOs, networks and consultation groups that benefit the local community.

9. Responding to other policy agendas

Examples: ensure equal opportunities/access and human rights; understand employer demands in context of future needs; renew purpose of HEI; provide leadership for society in complex, rapidly changing times; higher education to set as well as respond to agendas

Institute of Technology Sonora (ITSON), Mexico – created the Performance Improvement Institute (PII) to foster human, organizational and social development through technology. This institute also ran a Ph.D. programme in Strategic Planning and is implementing 12 projects that will bring sustainable development to communities. ITSON has also created the Centre for Community Development (CCID), which was constructed in the poorest neighborhood in Ciudad Obregon to provide outreach and attend to society's problems. The CCID aimed to develop and certify human, technical, social and economic competencies among underprivileged people in order to create a sustainable social change in the community, thus enabling individuals to contribute to and feel responsible for their communities.

University of Veracruz, Mexico – encouraged social consciousness among students so that they can participate in activities linked to the eradication of poverty in poorer municipalities. Complying with national legislation that students must complete 480 hours of community service, students carry out social service in some of the least developed towns and communities.

10. Demonstrating best values in the use of estates

Examples: ensure building design, refurbishment, all estate management is best practice for purpose and for environment; forge local partnerships (e.g. renewable energy generation)

University of British Columbia (UBC), Canada – participated in the largest energy and water infrastructure upgrade ever on a Canadian campus, which terminated in March 2006. Designed to save an abundance of energy and water while also improving comfort for building occupants, the ECOTrek project reduced energy use at UBC by about 20 percent annually. It also cut annual CO₂ emissions by about 15,000 tonnes and water use in core facilities by up to 30 percent each year. ECOTrek has reduced expenses by \$12 million in total with no cost to taxpayers. Facility updates included upgrading ventilation systems for more than 100 buildings, installing electricity, steam and water meters in more than 50 buildings, and adding automation controls in 100 buildings to turn off ventilation systems when not in use.

Additionally, UBC has established Renew, which is designed to save buildings (and therefore materials, energy, and money) before they deteriorate to such an extent that they need to be demolished. The programme is providing aging buildings with upwards of another 20 years of life; in the process, the renovations enable facilities to better meet their evolving requirements. Renew began in 2004-05 by revitalizing two buildings, both built in 1925 as temporary service buildings. During renovations, the university managed to salvage many of the characteristic features of the buildings, including frameworks and timber floors. The renovations for both buildings cost a total of \$3.7 million. By comparison, it would have cost \$5.6 million and \$7.4 million respectively to replace the two buildings, a saving of \$9.3 million. In 2005-6, the Chemistry North building was renovated. This 1959 research laboratory was in dire need of up-to-date ventilation, improved air quality, and modernized heating and computer systems. UBC Renew gutted the building but saved the existing heritage exterior walls and concrete frame. In addition to bringing the building up to contemporary research standards, UBC Renew saved tonnes of concrete from the landfill, and reused windows and frames. The renovation cost \$10 million, while replacing the building would have cost taxpayers \$15.5 million.

11. Fostering excellence in research and teaching

Examples: integrate student learning with campus improvement and community experience; sustainability research/consultancy; encourage innovation for sustainable design solutions

University of British Columbia, Canada – has been in recent years piloting several innovative storm water management systems. In 2005-6, a pilot-test of a new closed-loop storm drain system was installed in Hawthorn Place, a housing project in the Mid Campus neighbourhood. The project is designed to use well water for drought-tolerant gardening. The closed loop consists of a deep drainage system around the outside of the underground parkades. The water drains into the aquifer and becomes a large pond of stored water. This, in turn, is used for irrigation and creek generation. The water is returned to the ground by infiltration with the surplus discharging to the storm drain. The closed loop formed by the cistern and well reduces UBC's demand on the region's watershed and stabilizes fluctuations in storm water drainage to UBC's cliffs.

And earlier, in 2003, the university began to develop a special parking lot at West Mall and Agronomy Road. Hailed the 'Orchard Lot', it features a permeable surface made of plastic textile, gravel, sand, soil, and grass. The other half is regular blacktop, which mitigates cliff erosion by directing water to underground infiltration chambers. Usually storm water goes directly into a piping system, which empties over UBC's cliffs and causes erosion. This water, however, goes into a trench full of rocks. This allows the water to seep slowly into the ground. This system became a precursor to new work carried out in the following years on peak storm water volume mitigation and regeneration through well pumping.

12. Promoting community relations and outreach

Examples: share sports, library, other facilities; build portfolio of joint ventures for student, staff and local residents; sustainable transport partnerships

Tipperary Institute, Ireland – organised an Arts Forum, which supported a variety of arts events during the year including displays by local artists and also hosted traveling exhibitions from leading arts institutions. Staff have also actively participated in radio and television programmes which discussed sustainability related issues.

13. Saving money/being efficient

Examples: use whole life costing; invest ethically (e.g. pensions); provide incentives for adding value to physical resources

Hosei University – has drafted a green purchasing policy for stationary, recycled paper products and electronics/appliances which evaluates the financial and environmental sustainability of purchases. The current policy is being reassessed and expanded to reduce the CO2 emissions related to travel activities and in energy management. A special committee on ecological purchasing has been established to examine these procurement issues.

14. Competing internationally/regionally

Examples: structure and make relationships to facilitate ideas-innovation-implementation process; export models and programmes

University of Graz, Austria – located within the Institute of Geography and Regional Science is the Regional Centre of Expertise (RCE). The University of Graz, along with the RCE facilitators has been involved in sustainability research in various fields for many years. The foundation of an RCE has been the logical next step to deepen and promote ongoing sustainability research and development activities on a local and global level. The RCE strengthens and fosters regional, national and global co-operation and facilitates the implementation of research and education for sustainable development into the region of Graz-Styria.

15. Modernising risk management

Examples: report on environment and social impacts as well as financial; use procurement strategies to support local markets and ethical trade

Portland State University, USA – the food service contract with provider, Sodexo, illustrated sustainable and responsible procurement practices that had overreaching effects on the local economy and environment. PSU's contract with Sodexo required the purchase of local, organic food and further stipulated that menus changed

according to availability of seasonal and local ingredients. Sodexo has been making progress with their sustainable food sourcing, waste management practices, and commitment to sustainability in the services they provided. Purchasing food from local sources strengthened the regional economy, provided high quality fresh foods, and helped preserve the natural environment and landscape by reducing transportation demands. Purchasing organic food reduced the consumption of petroleum for the production and shipment of fertilizers and pesticides. In addition, Sodexo catering services supplied compostable disposables, including napkins, coffee cups and cutlery. To ensure Sodexo met its targets and commitment to sustainability, performance had been monitored and progressed. Performance results showed that Sodexo has met the target of 30% total local food.

What the responses revealed

On the basis of the fifteen case studies, it appears that sustainability continues to be defined in relatively narrow terms for HEIs. The fifteen HEIs had a strong focus on activities linked to environmental sustainability, but a somewhat weaker focus on social responsibility linked to the well-being of staff and students, as well as community relations in general, while there is limited focus on economic sustainability. Additionally, as HEIs strive to implement the multiple objectives of environmental, social and economic sustainability, some actions, and practices bridge two or more of these types.

In all participating HEIs in the project there was recognition for the need to form partnerships with other associations and organisations engaged in sustainable development and to be fully engaged in society's efforts to find a sustainable path to development.

Many of the HEIs were actively teaching and researching issues around sustainability, mainly focusing on environmental and ecological concerns. This was driven by climate change and energy issues which were receiving significant funding from government and industry. Teaching about sustainability was seen by many HEIs as an opportunity to develop new pedagogy, such as optimising the interaction between staff, students and the whole campus and even into the community. Teaching serves as a means to integrate all three types of sustainable development and synchronising the various assertions in the visioning statements. The responses reveal that even small changes in procurement practices or buildings management can contribute to sustainability at some level.

In the field of environmental sustainability

Many of the HEIs had environmental policies in place that followed agreed frameworks such as 'Environmental Management Systems' or national guidelines, the main variation was the scope. Some HEIs had whole campus plans including all environmental issues while others only included a part of the HEI or only some key environmental issues such as water and energy. Where these programmes were more highly developed procurement, was seen as an important lever for change and the scope of resources expanded to include food and chemicals. Most HEIs are not directly engaged in resource extraction, but do have a significant, direct effect on resource use. Beyond the development of environmental management systems, some institutions have connected their financial systems to the management of resource use through purchasing and developing financial incentives for green behaviour.

Many of the HEIs were actively teaching and researching on issues around resource extraction and pollution. Teaching focused on adapting courses to project-based learning, and included engagements either with the local community or with the surrounding ecosystem.

Biological diversity represents one of the more obvious elements of the environmental debate. All HEIs in the study were able to point to projects, like using native plants in landscaping or research projects into methods for reforestation, and some had taken a strategic overview that linked managing of biodiversity on campus with teaching, research and community interaction. Some HEIs had gone so far as to establish projects in the wider community and used their own financial resources to deliver the projects.

In the field of social sustainability

For social sustainability an important area of expansion is the availability of professional and personal development programmes for staff and students. Nearly all the HEIs in the study had enriched occupational health practices and facilities for staff and students; some had very generous packages or compulsory courses in health and physical education. There were also examples of HEIs being at the forefront of the debate as they were already developing a wellness agenda and moving beyond care to prevention and into areas of mental health. In some countries, reporting on staff satisfaction is mandatory and publicly available, which seemed to help encourage good practice and a focus on well-being.

Many HEIs had embedded outreach programmes such as public lectures or popular publications and some had even started campaigns which simultaneously support their encouragement of student activism. Some HEIs also made volunteer opportunities available for students to enhance core curriculum and to develop a sense of community.

HEIs globally had a strong track record of open democratic governance systems that allowed staff and students to make contributions to decision making. This was found to be the case with the HEIs in the project. In all HEIs there was recognition of the need to form partnerships with the other bodies engaged in sustainable development and be fully engaged in society's efforts to find a sustainable path to development.

Many of the institutions mentioned their national policy frameworks as being key influencers. For example in Mexico, it is a mandatory degree requirement for students to engage in community service and volunteering as according to 1939 legislation. And in Finland, an HEI, that receives its core funding from the local government, must actively support the local government's commitment to sustainability in its study programmes and R&D activities. The decision to implement Corporate Social Responsibility into the HEI management and reporting systems was, however, made inside the HEI in order to improve the collaboration with its key stakeholders, including the local government. Recognising the mutual 'win-win' situation, the local government provided pilot funding for the HEI to set up a CSR reporting system.

Most HEIs had a strong track record of providing courses to help their communities locally or nationally develop. This interaction had also led to many partnerships forming particularly with Small and Medium sized Enterprises (SMEs), which use the HEIs innovative capacity to develop new products and services.

In the field of economic sustainability

Beyond the development of environmental management systems some institutions had connected their financial systems to the management of resource use through purchasing procedures and developing financial incentives for green behaviour.

HEIs were adopting risk management, using their resources more efficiently and justifying their existence in new and innovative ways. At the operational level this meant new forms of contracts with suppliers, new charges for previously free goods like parking and financial rewards for staff that contributed to the sustainability of the HEI.

HEIs identified two main contributions to innovation: firstly, in their own management and in particular the planning of buildings and infrastructure, and secondly, and ultimately more significant was the use of research capacity to address these big issues.

All HEIs recognised the importance of supporting businesses and wider society, some had support from their governments to do so but only one partner reported that a positive engagement by staff could be rewarded with promotion. Some HEIs were reinforcing business relationships, while others were exploring opportunities to enhance engagement with local and regional companies.

What the workshop revealed

In addition to the questionnaire component, 11 of the 15 HEIs participated in a two-day workshop. The aim of these sessions was first, to identify the strengths and priorities of each participating HEI, and record examples of good practice; and second, to clarify a vision for how HEIs can optimise their contribution to sustainable development, and to identify barriers to success and suggest possible solutions in terms of policy and practice.

At the workshops the representatives of the HEIs were asked to describe the models that were currently used at their institution, either in teaching or in strategic management of the HEI. They were also presented with different models of sustainability including: The triple bottom line, the Five Capitals and the Natural Step.

The need to strategically embed sustainable development into the different functions of an HEI came through very strongly from the participants. In order to succeed in establishing a sustainable campus, curriculum and community, there appears to be a need for a comprehensive framework to implement sustainable development. In order to achieve sustainability, the different objectives need to be considered at the same time. A framework will not only be required to join up activity across disciplines, functions and personnel, but also to synthesise the different elements of sustainability.

The sustainable development implementation frameworks in use were divided into three types:

- *Type 1*: triple bottom line + plus
- *Type 2*: established business implementation frameworks
- *Type 3*: tailored university frameworks

Type 3 represents the most sophisticated level. The participants using these approaches had considered type 2 models, added their own theoretical perspective and then engaged in widespread consultation and established a set of principles with which to deliver sustainable development in the HEI (Box 3).

There was some consistency in approach across the HEIs. However, some participants reported that no agreed definition of sustainability was in use. This is not only an issue for higher education institutions, but for all levels of education.

It would be interesting as a future piece of research to ascertain how well these approaches work in practice by contrasting their ability to inform institutional planning, monitoring and improvement policies. Eventually, it should be possible to compare the achievement of the HEIs desired outcomes, and to assess the impact of not having a shared understanding of sustainable development.

Box 3. Frameworks for sustainable development

Type 1 the triple bottom line + plus, with the addition of a particular emphasis on other considerations:

- Economic/Social/Environmental plus
- Cultural
- Ethical
- Equality
- Equity
- Social responsibility
- Politics
- Future generations

The Triple Bottom Line is a useful point of entry for sustainable development. It is simple and relatively non-controversial. Its drawback is its lack of sophistication when it is used to develop implementation plans. For this reason many partners had added 'lines' to make it more relevant to their institutional culture. Most added culture as a fourth line to match UNESCO models.

Type 2 sustainable development implementation frameworks used by other organisations (notably businesses)

- Five Capitals
- The natural Step
- $I = PCT$ where Impact = Population x Consumption per person x Impact per unit of consumption.
- Global Reporting Initiative (which is also linked to Corporate Social Responsibility)

Recognising the shortcomings of the triple bottom line led many partners to develop more sophisticated models. This progression mirrors experiences in industry where a level of specificity and detail is required in order to establish meaningful and achievable plans.

Type 3 sustainable development implementation frameworks developed by HEIs specifically for their particular circumstances, for example:

The Autonomous University of San Luis Potosi uses the framework: nature, environment, culture, society, economy and politics.

The University of British Columbia used a set of nine principles

- Improve human health and safety
- Make UBC a model sustainable community
- Increase understanding of sustainability inside and outside the university

- Reduce pollution
- Conserve resources
- Protect biodiversity
- Maintain and maximise the utilisation of the physical infrastructure
- Maintain and enhance the asset base
- Ensure ongoing economic viability

Another example from the University of Plymouth is The Four 'C' approach:

- Making the CAMPUS more sustainable and inclusive
- Including sustainability ideas and issues in CURRICULUM, teaching and learning
- Joint initiatives for sustainability with COMMUNITIES in the South West
- Creating a sustainability CULTURE within the University as a whole

VISIONING EXERCISE

How higher education institutions see their contribution to sustainable development in ten years time

A visioning exercise and the resulting vision statement are constructive tools for HEIs to use as part of a transformative strategy and as future reference for consultation on progress. It serves as an ideal concept from which the institution can move forward. To effectively shift away from current practice and implement the statements, Kernaghan (2003), identifies four questions that institutions should consider when drafting the visioning statement:

1. where are we now?
2. where do we want to be?
3. how do we get there?
4. how do we make it happen?

Reflection on these questions should result in a well-formulated vision. Ideally, it should also include certain elements, mainly clarity and specificity in stating concretely how and when objectives will be achieved, with attention to how the document is worded. It should also be reflective and assess where the institution is and where it would like to be, and subsequently adapt policies from this and feed into the mission statement or strategic plan.

The visioning exercise at the workshops was used in order to establish what the HEI would look like if it were making an optimum contribution to sustainable development in ten years' time. Ten years was chosen as the reference point because it is far enough in the future to allow for some creativity but still within the limits of a person's term of office. The Higher Education Funding Council for England (HEFCE) has also adopted this visioning strategy to signify the importance of integrating sustainable development into higher education. Using the ten year benchmark, the HEFCE vision states: "The higher education sector in this country will be recognised as a major contributor to society's efforts to achieve sustainability – through the skills and knowledge that its graduates learn and put into practice, its research and exchange of knowledge through business, community and public policy engagement, and through its own strategies and operations" (HEFCE, 2009). The statements envisioned as long-term objectives are necessary since sustainable development is not a passing fad, but a commitment to forward thinking living, building, learning and managing.

During the workshop, participants were also asked to outline how this might be achieved. As well as establishing visions for individual universities, the amalgamated results of this exercise are helpful in pulling out the common ideas of higher education's contribution to sustainable development amongst international participants. The vision statements (Box 4) demonstrate a range of reflection and commitment, and the diverse ways to approach the subject of sustainable development at the institutional level.

Box 4. University Vision Statements

Note: where official versions of vision statements exist, they are presented, however most visioning statements are not the official HEI visions.

Hosei University

Hosei has an overarching strategy to be an open and green university.

“In ten years, Hosei University will have helped to realise the sustainability of Japanese society.

It will have achieved this by acting as a social entrepreneur and community leader. Research and teaching will be applied, interdisciplinary and develop in partnership with stakeholders across the different sectors of society. Hosei graduates will be able to adapt to Japanese society’s changing needs and provide sustainable solutions.”

Chalmers University of Technology

“Chalmers is considered a leading university for education for sustainable development. There is a continuous dialogue and reflection within Chalmers and with stakeholders. Chalmers is driving the mainstreaming of sustainable development by promoting planetary stewardship.

Learning at Chalmers will be transformative and include the development of general competences in students such as lifelong learning and respect.

The campus will be a place which inspires creativity in students and helps them understand sustainable development.”

Turku University of Applied Sciences

“In ten years time the Turku University of Applied Sciences will be a leader in sustainable development through its strategies and operations by:

- Having a clear action plan for sustainable development
- Ensuring that all staff act sustainably and all students have the capacity to implement sustainability in the work and private life
- Promoting regional sustainable development
- Developing a fully sustainable real and virtual campus
- Rewarding green activities by staff and students”

University of Copenhagen

“In ten years time, the University of Copenhagen will be contributing to global sustainable development by:

- Maximising its global responsibility and leadership role in less developed countries, by facilitating knowledge transfer, capacity building and increasing the mobility of staff and students.
- Integrating environmental, social, economic and ethical aspects into all teaching and research.

- Broadening the spectrum of disciplines contributing to research into sustainable development
- Specialising on tackling the urgent issue of energy through teaching and research that includes natural and social science perspectives and adopting sustainability science as a teaching and research theme.”

Technical University of Catalunya

“By the year 2015, the Technical University of Catalunya will be a key reference in technology for sustainable development on a local, regional, European and global level, through our contribution to education as well as research, development and innovation. It will achieve this by:

- Recruiting students who recognise the sustainability leadership of UPC
- Being a respected international advisor on sustainable development technology
- Recruiting top academics in sustainable technology
- Building a reputation for integrity about sustainable development
- Delivering concrete impacts through its work
- Developing intellectual leadership in specific areas.”

Tipperary Institute

“In 10 years time, TI will be recognised locally, regionally, nationally and internationally as a leading institution in the field of sustainable development. TI will have achieved this recognition because its campuses minimise the use of scarce natural resources, minimise outputs to the receiving environment, actively pursue issues of social equity in the recruitment and support of students and staff and has adopted and is consciously implementing reporting policies and processes to address these issues through collaborative mechanisms. All TI graduates will be able to influence change to sustainable approaches in whatever environment they are based and will have developed this capacity through engagement in learning and practice in the areas of development and sustainable development. TI will be requested to engage in policy making regarding sustainable development and will facilitate policy development and implementation through the provision of research based evidence, the publications of thinking on sustainable development and the empowerment and capacity building of the community, voluntary and public organisations.”

University of the Sunshine Coast

“In ten years time, the University of the Sunshine Coast will have succeeded in developing sustainability and regional engagement as key areas of focus for learning and teaching, research and outreach, working in partnership.

It will have achieved this by graduating students and developing staff that can effect change for sustainable development in society. It will have developed partnerships with the public and private sector to build the capacity of professionals in the region and helped communities to achieve a sustainable future through its teaching learning and interdisciplinary research at a local and international level. Underpinning this activity will be the integration of sustainability into the management system of the university and the continuing development of the facilities to the highest sustainability standards as an architectural laboratory for sub-tropical design.”

University of Veracruz

“In ten years time, the University of Veracruz will be a tool for transformation and a driver for change to sustainability. It will be a locally relevant institution, responsive to need and provide solutions which are locally relevant using global thinking. The University of Veracruz will lead by example aiming for the highest sustainability

standards in its management, teaching, research and work in society. Graduates of the University of Veracruz will be responsible citizens and its staff will be agents of change for sustainability.

It will achieve this by coordinating its teaching, research and communications with the needs of the public, private and social sectors, building on strengths in cultural, social and personal knowledge to create common university wide interdisciplinary objectives for sustainability. It will develop its teaching and research collaborations with government and business and build partnerships with other universities to share learning and benchmark progress.”

Autonomous University of San Luis Potosi

“In ten years time, the university will be working in the service of society as a change agent for sustainability, operating in active networks and partnerships. The graduates will be leaders for change and research will produce solutions for sustainability.

It will achieve this by being dynamic, up to date, flexible, pertinent and innovative in all its activities including the development of new teaching methods and course content. A shared understanding of sustainability and clear objectives agreed by the whole university will support this work.”

Portland State University

The existing PSU sustainability vision is:

To be an internationally recognised university known for excellence in student learning, innovative research and community engagement that simultaneously advances economic, vitality, environmental health, and quality of life.

The vision developed in the workshop represents the next stage of detail:

In ten years Portland State University will be an exemplar of a sustainable business model by embedding sustainability into its management system. It will work closely with the local community and conduct sustainability research that is interdisciplinary, integrating science and policy in order to inform policy decisions at different levels. Graduates will have an understanding of sustainable development that they can apply internationally and campus environmental performance will reach the highest standards. A rigorous evaluation process will support this.

University of Plymouth

The existing University of Plymouth vision is:

“The University is committed to transforming itself from an institution characterised by significant areas of achievement and excellence in sustainability adherence and provision to an institution modelling University-wide achievement and excellence and, therefore, positioned to make a significant contribution to national and international efforts to embed sustainability in higher education.”

University of British Columbia

The existing mission of the University of British Columbia is:

“To earn the respect of future generation for the social, ecological and economic legacy we create.”

Analysis of visioning exercise

Some similarities and differences present themselves in how HEIs aim to implement sustainable development practices and values. The visioning statements describe the areas or functions, but not the

means. Universities have adapted their visions to meet the needs and culture of the learning environment and subsequent statements demonstrate the uniqueness of each situation, commitment to and level of engagement with sustainable development. However, it became clear in the workshops and visioning statements exercise that there is a need to institutionally integrate sustainable development into *all* of the different functions of an HEI.

One aspect of the visioning exercise that was not addressed is how the information in the statements will be disseminated to the staff, faculty and student body. This is something to consider, as the support from multiple stakeholders, both internal and external, will be needed to succeed in implementation.

By breaking down the visions into statements of objectives, it was possible to put them into categories depending on what they referred to. The categories identified were organisational, students, research, teaching, staff, campus and local community, although attention to each category was uneven and depending on institutional interests. In order to achieve sustainability, the different objectives need to be considered at the same time. Within these categories, the statements have been arranged into three routes toward sustainability. This arrangement is not definitively demarcated, rather it is fluid and there is some overlap between how the statements can be categorised. The first route toward sustainability places statements as broad, ambitious aims. The second type of statement is more directed at the HEI being an agent of and for societal change. The third type is related as much to being an agent to change as it is to the reputation of the institution, and how it will be perceived by the community, the students and other HEIs. In these statements, institutions reflect a desire to be seen as a guide in sustainable development initiatives. For each of the seven categories, the statements are listed according to pertinent route in order to demonstrate the variance in HEI visioning.

Organisational objectives

Statements expressing organisational objectives

Ambition	Agent for change	Example
<ul style="list-style-type: none"> • Contribute to regional sustainable development • Help society achieve sustainable development 	<ul style="list-style-type: none"> • Be a tool for transformation • Be a deliverer of change • Be a social entrepreneur • Be a community leader 	<ul style="list-style-type: none"> • Gain the respect of future generations • Have integrity on sustainable development • Be responsive to societal need • Be a key reference for sustainable development • Be a model of university wide achievement and excellence in sustainability

The organisational visions seem to display one or more of three discernible approaches to sustainability. Under the first form, the institutions have identified general aims toward sustainable development. For example, institutions mentioned making contributions to regional sustainable

development, and even further reaching, by helping society to achieve sustainable development. These statements of intention do not clearly outline effective strategies for implementation, but identify the organisational objective to play a part in advancing sustainable development. These generalised statements are difficult to use as a tool to monitor progress. Yet, by remaining purposely general, organisations can maintain some flexibility in the approach and objectives. Statements under the second type specifically refer to being a deliverer of change, being a social entrepreneur, being a community leader and being a tool for transformation to assert the institution's influence on affecting sustainable development. Lastly, the third category are those organisational statements that reflect an institution's desire to be seen as a guide in sustainable development. HEIs want to set an example, gain the respect of future generations, and be a key reference for sustainable development.

Humility runs through these ambitions but also a desire to help society to be more sustainable. The respect of future generations was mentioned frequently as was responsiveness to social need. These are ambitious aims and it was recognised that higher education is an important agent for change and transformation in society. That societal role is coupled with a realisation that HEIs need to change themselves by building their knowledge base, and showing leadership with integrity.

That these statements appear to show a dominant characteristic does not imply that the HEI is not concerned with others, perhaps more that vision statements can take different forms and achieve multiple objectives.

Research objectives

Statements expressing research objectives

Ambition	Agent of change	Example
<ul style="list-style-type: none"> • Be inter-disciplinary and multi-disciplinary • Bring together the natural and social sciences 	<ul style="list-style-type: none"> • Use stakeholder partnerships 	<ul style="list-style-type: none"> • Advise on sustainable development technology • Promote leadership in less developed countries

Envisioning long-term strategies on research is important for showing how the HEIs can advance the debate and dialogue on sustainable development. As noted earlier, research is where HEIs have a unique position and profound responsibility. It is now accepted orthodoxy that research for sustainable development should be inter- and multi-disciplinary and that research should be driven by societal need rather than academic preference. Nothing in this research contradicts that. In the HEIs research operations, the statements encompass the three routes. The more ambitious objectives are those that aim to make research inter-disciplinary and multi-disciplinary, and to bring together natural and social sciences. These aims are far-reaching, allowing research to be flexible and adaptable to the needs and interests of the HEI. Research is also seen as an agent for change, in which an HEI can take advantage of its stakeholder partnerships to focus studies and investigations on issues of sustainability. The HEI will also participate in promoting good practices and new technologies. Under the third form, where the HEI envisions itself as a guide, an example of a statement was to: advise on sustainable development technology and promote leadership in less developed countries.

Objectives related to students

Statements on objectives related to students

Ambition	Agent of change	Example
<ul style="list-style-type: none"> • Be adaptable • Provide sustainable solutions • Influence change • Understand SD and apply it internationally • Engage in lifelong learning • Value respect • Have been recruited knowing the sustainability culture of the HEI 		

Students will be the key recipients of the knowledge and skills imparted from the HEI. Subsequently, students will then be the key transmitters of these ideas and principles. Each semester and every year, the HEI welcomes incoming students while parting ways with graduating ones. This regular turnover entails a responsibility to engage a new cohort in learning and to transmit ideas. Student participation in HE4SD was not high, but clear messages came through that students wanted their tertiary education experience to equip them as adaptive sustainable development experts with the skills and knowledge to shape their future world. Students thought that eventually the ability of an HEI to build their sustainability literacy would affect their choice of course or institution. The visioning statements can be described as ambitious in their expectations of future graduates. According to the exercise, students will be adaptable, provide sustainable solutions, influence change, understand sustainable develop and apply it, engage in lifelong learning and value respect.

One action the HEIs propose to take is to recruit students who are already familiar with the sustainability culture of the particular HEI. The success of this approach may well depend on how successful the HEI is in getting its message out to potential students and whether they are receptive to these ideas. As demonstrated by the 2006 OECD Programme for International Student Assessment (PISA) survey, younger students are increasingly aware of and interested in sustainable development issues. The study further suggests that this interest and proficiency in environmental issues is cultivated by learning systems and curriculums that expose students to these topics (OECD, 2009). From the higher education perspective, hopefully this awareness and fascination will translate beyond the secondary level and into the tertiary level. The visioning statements did not focus specifically on the skills or disciplines for students to acquire or engage in, but rather a broad focus on sustainable development knowledge and its present and future application. An education in which students are encouraged to learn and continue to learn about sustainable development and its applications is a

striving objective. Students, upon leaving the HEI, should be modes of change; a truly ambitious vision.

Objectives related to teaching

Statements on objectives of teaching

Ambition	Agent of change	Example
	<ul style="list-style-type: none"> • Be transformative • Have SD integrated into all courses 	

Visions of teaching produced a less comprehensive list. As expected, the area of teaching was conceived as an agent of change, unfortunately it is not as developed as the other functions. There has been much discussion of education for sustainable development and it seems that a global consensus has emerged, where teaching should be transformative in nature, suggesting the explicit consideration of ethics, values and spirituality, as well as experiential learning and well-developed reflective skills in students. There was an acknowledgement that stand alone sustainability courses were useful, but they were always seen as a stepping stone to the real goal of integration into the core curriculum. Teaching by nature is about changing student’s ideas and influencing behaviour, so it is anticipated that teaching for sustainable development would accord with this notion. While the teaching objective aspires to integrate sustainable development concepts into all courses, the statements did not mention making this an area of inter-disciplinary or multi-disciplinary teaching as is seen in the research aims. In the OECD (2009) assessment of science competencies of 15-year-olds, students named school as the primary source for information on environmental issues signalling that teachers and curriculum are integral to development of knowledge on sustainability and ecological issues.

Objectives related to staff

Statements on objectives related to staff

Ambition	Agent of change	Example
<ul style="list-style-type: none"> • Act sustainably 	<ul style="list-style-type: none"> • Be recruited knowing the HEIs ambitions 	<ul style="list-style-type: none"> • Be rewarded for green teaching, research or activism • Be recognised SD academics

It was acknowledged that if teaching is to be transformative, the HEI will have to act sustainably by guiding and directing society. As society changes, then it will become easier to teach sustainably. However, the visioning statements were less attentive to teaching and more attentive to the staff; the focus was the HEI’s role as an employer, and framing the objective of attracting and retaining quality employees. During the workshops, there was substantial debate about how lecturers were rewarded and that there is a prevailing culture of rewarding the member of staff who gives papers all around the world as opposed to those that work hard to improve their locality. There is a clear need to reorient

reward systems to give credit for behaviour which encourages sustainability. Staff, like students, are important actors in promulgating the social, economic and environmental values of sustainable development within and beyond the HEI.

Objectives related to the campus

Statements related to objectives for the campus

Ambition	Agent of change	Example
<ul style="list-style-type: none"> Be fully sustainable 	<ul style="list-style-type: none"> Help students and staff to understand SD Be a laboratory 	<ul style="list-style-type: none"> Achieve the highest SD standards Be an inspiring place

At many HE4SD workshops, the campus was the starting point for the discussions on sustainability. The campus provided the back drop for learning and represented the HEI's greatest opportunity to make a tangible visible commitment to sustainable development through changes to and investments in buildings and facilities. For these reasons it was important that the campus be an example of sustainable living, using the existing green building standards for new construction and existing facilities, such as the Leadership in Energy and Environmental Design (LEED) or the BRE Environmental Assessment Method (BREEAM) to demonstrate this and use the campus to help students and staff live sustainably. The use of voluntary environmental rating systems like LEED and BREEAM provide instant recognition to greening efforts, make a statement of institutional practices and demonstrate commitment to sustainability. The campus, like other functions of the HEI, was regarded as an area that can be fully integrated into sustainability concepts. The visions do not articulate how, rather they aim for campuses to be inspiring places and places that enhance users' comprehension of sustainable development. The campus was also seen as a place that could guide and inform other institutions as a laboratory, where the HEI effectively demonstrates its commitments to sustainable development and the innovative measures it has implemented, and can also offer its intelligence to interested persons and parties.

Objectives related to the local community

Statements on objectives related to the local community

Ambition	Agent of change	Example
<ul style="list-style-type: none"> Have their capacity built Be empowered 	<ul style="list-style-type: none"> Receive locally relevant sustainable solutions Work in partnership with the HEI 	

It is significant that many visions acknowledged the importance of local communities, not just as a source of students, but as a partner who will look to the HEI for help and gain knowledge and power from their contribution to sustainable development. Visioning statements on the local community are determined goals toward real societal transformation, including building partnerships or starting projects with local schools, museums, parks, businesses, etc. HEIs made bold statements toward building capacity and knowledge, but also on empowering the local citizenry. Additionally, the

university as it interacts with the region can assert its role as an agent for change, in providing locally relevant sustainable solutions and in working collaboratively through local partnership with businesses, organisations and other institutions. The OECD reviews of higher education in regional and city development demonstrate just how extensive this interaction can go and how important it is for developing an economically, socially and environmentally sustainable community. Building partnerships between the HEI and the community can “provide opportunities for lifelong learning and contribute to the development of knowledge-intensive jobs which will enable graduates to find local employment and remain in their communities” (OECD, 2007). HEI engagement with the regional and local communities builds mutually beneficial relationships that include various parties and stakeholders, increasingly the likelihood of wide adoption of sustainability principles and practices.

Summary of visioning statement exercise

Every statement to achieve sustainable development is ambitious. Some of the visions, however, have been elaborated to define their role as contributors. Particularly as some HEIs have envisioned themselves as agents of and for transformation, but also as exemplary institutions that can be viewed as influential leaders and bestowers of knowledge and information. The HEIs that participated in the visioning exercise openly reflected on the unique advantages that the HEIs have to offer. It is important that the visioning statement set out to engage the entire institution and all of the actors within it.

Looking toward the future, each of the partner HEIs visioning statements can be placed within one of the three routes. Although statements can be generally categorised, some statements bridge categories.

Ambitious visioning statements conceived of sustainability broadly, and guide the institutional ideology to transform the community, the country and the world and integrate sustainable development values in the institutional management and functions of the institution.

Box 5. HEIs exhibiting ambitions in their visioning statements

Hosei University – “an overarching strategy to be an open and green university”, “will have helped to realise the sustainability of Japanese society”, “Hosei graduates will be able to adapt to Japanese society’s changing needs and provide sustainable solutions”

University of Copenhagen – “integrating environmental, social, economic and ethical aspects into all teaching and research”, “broadening the spectrum of disciplines contributing to research into sustainable development”

University of the Sunshine Coast – “will have succeeded in developing sustainability and regional engagement as key areas of focus for learning and teaching, research and outreach, working in partnership”

University of Plymouth – “transforming itself from an institution characterised by significant areas of achievement and excellence in sustainability adherence”

The overall impression of three visioning statements was one where the institutions viewed themselves in relation to sustainability as agents of and for change.

Box 6. Visioning statements suggesting that the HEI sees itself as an agent of/for change

Tipperary Institute – “graduates will be able to influence change to sustainable approaches in whatever environment they are based and will have developed this capacity through engagement in learning and practice in the areas of development and sustainable development

University of Veracruz – “will be a tool for transformation and a driver for change to sustainability”, “graduates ... will be responsible citizens and its staff will be agents of change for sustainability”

Autonomous University of San Luis Potosi – “will be working in the service of society as a change agent for sustainability”

Many of the visioning statements focused on the how the university will be perceived and the amount of recognition and respect it would receive as a leader and advisor in sustainable development.

There were five HEIs that drafted visioning statements focusing on their role as an exemplary institution.

Box 7. HEIs focused on how they are seen

Chalmers University of Technology – “leading university for education for sustainable development”

Turku University of Applied Sciences – “will be a leader in sustainable development”

Technical University of Catalunya – “being a respected international advisor on sustainable development technology”, “building a reputation for integrity about sustainable development”

Portland State University – “to be an internationally recognised university for excellence in student learning, innovative research and community engagement that simultaneously advance economic, vitality, environmental health, and quality of life.”

University of British Columbia – “to earn the respect of future generations for the social, ecological and economic legacy we create”

Implementing the vision

Sustainable development is still a fresh and challenging agenda, so it was not surprising that HEIs wanted to engage in the learning and planning process rather than delivering specific outputs. HEIs have conceived of three strategies for delivering the organisational visions.

The first strategy is to employ some type of assessment, either through peer review or a strategic evaluation. Peer review backed up by a robust rigorous evaluation was popular because it is transparent, reflexive and enabled HEIs to learn in a safe space. This strategy facilitates concise assessment and feedback to the process. It was clear that careful selection of a peer institution was important so that they understood each other's challenges and could help each other to play to their strengths, thereby going beyond solid action planning and produce tangible outcomes. Progress reports published at regular or key intervals providing support and recommendations can potentially accelerate the process, as well as provide transparency into the procedures and the indicators being measured. However, absent from this delivery method were the categories of evaluation. Evaluative criteria still need to be developed, but would provide consistent elements for review.

A second approach to delivery was concerned with the process, so that the HEI actually participates in transformation. This method concentrates on defining clear action plans, frameworks and targets. By articulating objectives, standards and policies in a formal and concise statement can help facilitate the integration of those values and realisation of the objectives.

A third way to ensure implementation of the vision is by adapting initiatives to the unique situation of each institution. Recognising the organisation's strengths can establish the correct path. There is interaction between the three strategies and HEIs are encouraged to adopt multiple modes of delivery to ensure that sustainable development is adequately implemented.

There is always a concern of being able to translate written policy into actual practice. However, developing strategies for concrete implementation can quell concerns about an institution's ability to deliver sustainability. The three strategies for implementing the organisational vision prioritise sustainable development, but to optimise delivery, it is recommended that HEIs combine assessment, process and organisational strengths, and opting for a comprehensive strategy, rather than a one-track agenda.

Box 8. Statements suggesting how organisational visions will be delivered

- Peer review
- Rigorous evaluation processes
- The integration of sustainability into the management systems
- Playing to organizational strengths
- Having clear actions plans
- Delivering concrete impacts
- Transforming the HEI itself

EMBEDDING SUSTAINABLE DEVELOPMENT INTO INSTITUTIONAL FUNCTIONS

Each HEI has contributions to make to the sustainability effort and can subsequently adopt a methodology appropriate to the overarching goals of the institution. To meet the various challenges presented, commitment to sustainable development implies that it will be applied to the various operations within a HEI, rather than one concentrated area. As noted above it is important to institutionally integrate sustainable development into all of the different functions of an HEI. Throughout the research two dominant strategies of embedding sustainability emerged: incremental or holistic integration.

Incremental integration starts with one project that creates awareness and visibility of pertinent issues, and then progressively evolves to encompass other functions of the HEI. This strategy was explained by Chalmers University of Technology, Autonomous University of San Luis Potosi (USLP) and Technical University of Catalunya (UPC). Each had followed a strategy of starting their engagement with sustainability as projects that combined consultancy and research. From these bases it was easier to engage academics and university managers and to get the learning spread through to teaching.

The second strategy of holistic integration was based on the university in its environment and the organisation creating the atmosphere for sustainable development. This was particularly true of Portland State University (PSU) and the University of British Columbia (UBC). Both universities were situated in cities that took sustainability very seriously: Portland, Oregon, U.S. and Vancouver, British Columbia, Canada. This meant that a reinforcing cycle of sustainability activities between the city, the university, the staff, the citizens and the students was established. It would actually have been very difficult for these universities to ignore the sustainability agenda.

To assist higher education institutions in formulating their approaches, this report offers a framework for reflection with ways to embed sustainability into the various functions of the HEI. A more detailed version can be found in Annex 4, the *Sustainability appraisal of a higher education institution's strategic plan* uses a set of 12 questions to evaluate how strategic plans address environmental, social and economic sustainability within the campus, the curriculum and the community. The questions demand sincere reflection on the institution's approach to sustainability, but allow for flexibility and adaptability in the responses. Using the questions as a guide, HEIs can formulate plans that correspond to the organisational mission, particular local and regional needs, and cultural differences, as well as analyse and review current sustainable (or unsustainable) activities.

Sustainability Appraisal

		Campus	Curriculum	Community
Environment	<i>Natural</i>			
Society	<i>Human</i>			
	<i>Social</i>			
Economy	<i>Manufactured</i>			
	<i>Financial</i>			

WHAT ARE THE CHALLENGES AND OPPORTUNITIES FOR IMPLEMENTING SUSTAINABLE DEVELOPMENT

The results from the questionnaires and workshops show that some challenges were specific to the issue of sustainable development whilst others were probably representative of challenges to getting any new initiative or vision established as part of a university's purpose, or indeed for any organisational change programme outside of HE.

The lists of challenges to implementing sustainable development in HEIs and HE were analysed to identify common themes. The most frequently cited challenges can be summarised as:

- Lack of strategic leadership in HEIs and government
- Low demand from most internal and external stakeholders, including students and employers
- Academic and professional silos which inhibit cooperative efforts across disciplines and institutions
- Poor communication within the HEI regarding the meaning and concept of sustainable development and how it applies

Whereas the list of challenges seems to focus on what might be considered traditional challenges to organisational change (such as funding, time and capacity), the opportunities listed capture a range of innovative and creative opportunities for HE. These opportunities are a mixture of local connections and concerns and larger global issues such as the global significance of climate change. The opportunities include:

- Inter-disciplinary nature of research in sustainable development
- Demand from internal and external stakeholders, including students and employers
- Zeitgeist – primarily attributed to climate change, but also progressive awareness of other sustainability issues
- Collaborations/partnerships to work together
- Networks to learn from each other
- A proactive unit or an individual within the HEI driving sustainable development with a clear plan

In comparing the challenges and opportunities, the overlaps between them become apparent. Employer and student demand is seen as a potential opportunity to influence innovative teaching styles, course offerings and degree requirements, but is obviously not providing the drive needed for sustainable development as its absence is also cited as a challenge.

Examples of new inter-disciplinary research were the valuation of natural and social capital or greater resource efficiency through biotechnology. This research in turn relied upon new collaborations across the HEI and with the local community and the spread of good practices. The

OECD (2007) publication, *Higher Education and Regions: Globally Competitive, Locally Engaged*, emphasises the ways in which HEIs can engage with the surrounding community. It specifically lists five opportunities for partnership: 1) generating human capital in the region through their learning and further education programmes in areas of sustainable development; 2) acting as a source of expertise through research, consultancy and demonstration; 3) playing a brokerage role in bringing together diverse regional actors and elements of capacity to the sustainability process; 4) demonstrating good practice through on-campus management and development activities, strategic planning, building design, waste minimization and water and energy efficiency practice, responsible purchasing programmes and pursuing good citizen type initiatives like a “green campus”; and 5) offering recognition and reward incentives for staff to be involved in sustainable development leadership groups in the regional community. This resource furnishes discernible examples for facilitating collaboration and for realizing the community and regional component of sustainable development.

As different stakeholders understand sustainable development in different ways and seek different outcomes, the most significant challenge is resolving the competing objectives and divergent functions of the HEI. Co-ordination between internal and external stakeholder demands or lack thereof presents obstacles that will need to be overcome, but also offers opportunities for HEIs to synchronise the three pillars of sustainable development.

WHAT ARE THE AREAS OF POLICY THAT SHOULD BE ADDRESSED

To enable HEIs to achieve their vision attention should focus on policy areas that will facilitate economic, social and environmental sustainability within the institution. This research has brought together suggestions from participants that warrant further investigation into legislation and policy. The following policy areas serve as initial starting points for action from which strategic choices could develop and provide a basis for subsequent investigation and research into feasibility and suitability for sustainable development implementation at the tertiary level.

An analysis of the participating institutions suggestions reveals that they have three distinct audiences, and suggests that targeted action from the following bodies and actors:

- National legislature
- Executive level
- The HEIs themselves

In addition to these three targets, it is useful to also consider these suggestions in the light of the most common barriers and opportunities and the areas of action they reveal/suggest. This will offer a way of prioritising and/or focusing the policy and research agenda, as well as aligning the obstacles and prospects.

The workshops made suggestions that address three of the barriers noted above: the need for increased strategic leadership, breaking down academic silos and encouraging demand from employers. Any of the three abovementioned audiences could take on responsibility for increasing leadership, as well as encouraging demand from employer and breaking down academic silos, to encourage the exchange of information and research within and between HEIs and governments.

It was also clear from the questionnaire that engaging in sustainable development efforts was to some extent dependent on financial and other incentives offered by the government.

Policy suggestions for the legislature

From the perspective of intervention from the legislature, vocalising the commitment to sustainable development in HEIs is the first action needed to be taken. From this, subsequent responses could focus on strengthening political collaboration and international agreements, as well as establishing financial incentives for sustainability to be achieved.

Three suggestions that might warrant further investigation are directed at the role of the national government. These include: Endorse supra national initiatives such as the UN Decade of Education for Sustainable Development and EU sustainability policy; put a commitment to support education for sustainable development in core strategic documents such as budgets; and integrate education for sustainable development in other related legislations such as Overseas Development Assistance.

Input to the workshops also suggested the amendment of Higher Education Acts to propose sustainable development be a purpose of higher education including the promotion of its integration into courses. In order to give a strong strategic signal and help to breakdown academic silos.

It is also important to establish clear links with local communities. Doing so may elevate the local and regional role of HEIs in delivering sustainable development and help to increase demand from employers to emulate certain practices.

Policy suggestions for the executive

Making sustainable development a priority at the national level would influence its implementation within the HEI. Although government action is not a panacea, adoption of policy is seen as necessary to make progress in sustainable development. Hopkins and McKeown (1999) find that government intervention, at any level, in sustainable development education is integral for reform and subsequent adoption of sustainable development principles. Specifically, government can work with HEIs in a range of areas to develop policies, research agendas and regional commitments, but also to provide incentives and apply political pressure. The suggestions that this report specifically identified include:

- **Providing national coordination and support networks** will help to overcome academic silos and communicate learning, and hopefully encourage co-operation within and between HEIs. It will also ensure that conflicting regulations or policies do not exist.
- **Financing pilot projects** was seen as important, though interestingly lack of finance was not a highly prioritised barrier to achieving sustainable development.
- **Improving dissemination** by initiating a public awareness raising campaign and evaluating a HEI's contribution to sustainable development were both ways to increase communication and understanding and complement other campaigns on issues such as climate change.
- **Requiring HEIs to develop sustainable development implementation plans** was seen as a good way of demonstrating leadership by government and would hasten the establishment of proactive units in the HEI responsible for their delivery.
- **Building the capacity of civil servants and university leaders**, for example putting sustainable development into government contracts would ensure that HEI leadership were fully engaged. Although quite how this should be inserted into contracts needs further exploration.
- **Rewarding good practice** especially amongst academics would help to erode the academic silos and put a high value on interdisciplinary research.

Since the workshop, an interesting example of a policy initiative by the 'executive' in one country was to set carbon reduction targets and link this to capital funding of building projects (HEFCE, 2010). This pronounced attention to climate change by a governmental agency provides inducement to change current practices. Furthermore, this piece of policy provides opportunities beyond minimising the institution's carbon footprint through energy efficiency and improved building management, and sets HEIs to act as a model for society.

Policy suggestions for HEIs

Based on the results of the questionnaire and visioning exercises, HEIs had progressively adopted policies toward incorporating sustainable development values. The issue lies not in the ideas, but the implementation. The most important way an HEI can contribute is to engage internal and external stakeholders across the various functions of the institution to ensure co-operation in the process. Developing sustainable development action plans would engage senior management and give leaders a chance to emerge as advocates within the institution. Creating various administrative bodies or decision-making committees would help make policy in the various functions of the HEI. However, policies and actions taken need to be announced to the entire HEI. Additionally, a clear, established concept of sustainable development and a vision implemented by senior management will demonstrate the strategic leadership needed. This includes developing measurable and quantifiable features of sustainable development and then using these instruments to report back to shareholders in order to demonstrate the progress in economic, environmental and social development. There are three types of actions that might prompt the HEI to be proactive in sustainable development. These actions and their advantages include:

- **Engaging in peer review** will help build strong mutually beneficial collaborations, start to share learning across networks and hold HEIs to account. Establishing guidelines and targets, and then periodically reviewing them will ensure policies are implemented and progress being made. Publishing reviews outcomes will also increase transparency and accountability, as well as promote broader adoption of good practices.

Example: In 2004, Cornell University administered a questionnaire to 28 U.S. institutions that were surveyed on campus sustainability. The outcome was *Peer Campus Sustainability Survey Final Report* which evaluates how these universities are progressing in terms of sustainability.

- **Establishing professional recognition** for staff engaged in sustainable development research, teaching or managing and valuing inter-disciplinary research will help to break down the academic silos. Engaging staff will help develop internal advocates who place pressure on higher-level administrators to act, and also to create a culture of sustainability.
- **Building the capacity of university leadership** from the principal to heads of departments and then staff and students will ensure that strategic initiatives are implemented and that demand for sustainability from students is well informed and positive. Presidents and deans should commit their institutions to a set of tangible objectives, and these objectives should be clearly announced to students, staff and faculty in order to develop multi-level commitment to the ideas.

While broader initiatives for engaging stakeholders might be important, a more focused idea that emerged was to prioritise research in key sustainable development areas to use research as an engine for change in teaching and to help develop a unit that can drive sustainability in the HEI.

From these policy suggestions, it is hoped that the three audiences can find common ground and work together to apply ample incentives. Additionally, the policy suggestions are meant to inform broader research and generate innovative approaches and ideas; the list is not exhaustive. The identified areas reflect the direction HEIs should be moving, however these ideas require further investigation and exploration.

CONCLUSIONS AND NEXT STEPS

This short survey of the current activities of some HEIs across 12 OECD member countries shows that universities have made progress on sustainable development, particularly environmental aspects, in spite of the lack of a national legislative framework. However, as noted in the introduction, experience within the UK teaches that even the most committed institution will find it difficult to progress without external factors and policy being addressed. Despite the varied examples and activity, HEIs focused mainly on environmental aspects and had limited activity in social or economic aspects of sustainable development. Adherence to sustainable development objectives and principles is both an opportunity and challenge. It is an opportunity to transform institutional practices and activities, but a challenge in making comprehensive changes. To fully realise sustainable development, it is important to recall that the three pillars work in conjunction with one another to produce balance and stability. And as noticeable from this exercise, most HEIs have not yet attained this kind of sustainability. Formulating and executing a visioning statement plus a framework fully recognises the complementary and integrated nature of sustainable development. It is clear from this research that these procedures are needed to make real progress.

The study showed that there is a need to institutionally integrate sustainable development into all the different functions of an HEI and to make an institutional commitment through a sustainability agenda. Although HEIs are incorporating sustainability into some of their activities, there remain some challenges to comprehensive adoption and to move from the incremental to the transformational. The discussion of barriers and corresponding policy recommendations went some way to suggesting ways to make the uptake of sustainable development more widespread and prominent across the countries. Again, the barriers cited by the participants had much in common and it would be worth exploring the value of building networks between countries to support each other in making change happen. This would be particularly useful in common economic areas such as the EU where joint approaches to HE are already underway.

Whilst much discussion of sustainable development tends to focus on barriers, the emphasis of HE4SD was on envisioning a positive future for HEIs over a ten year period, and in thinking carefully about the opportunity that sustainable development provided for HEIs and their stakeholders. The visions had much in common, suggesting that people's desires were similar globally. The opportunities showed how closely linked many HEIs were to both national and local issues and that there is a high level of understanding of how these could be linked to achieving sustainable development. Yet the vision statements in themselves were less attentive to teaching and more attentive to staff and the role of the HEI as an employer, this might suggest that the focus has been on the direct impact on sustainability rather than the indirect impact through influencing behaviour.

Given the ambitious visions set out, it would appear that higher education is nowhere near optimising its contribution to sustainability despite the inspiring and creative understanding of what that contribution might be across teaching and research, community links, global responsibility and institutional management. This could in part be because as the study suggests in implementing their visions, HEIs have focused more on the learning and planning process rather than delivering specific outputs. However, they have developed three strategies for delivering institutional visions centred on assessment, process and organisational strengths. Yet HEIs need to consider combining these strategies to optimise delivery of the vision. Even then, so far as assessment is concerned more attention needs to be focused on evaluation criteria. Although this report identifies suggestions for exploring areas of policy to support integration of sustainable development into the activities of the university, which will hopefully reap some benefit in the future, HEIs are faced with addressing the

issues today. Currently, HEIs have adopted at least one of two dominant strategies for embedding sustainability: incremental or holistic. The research did suggest a potential framework that could assist institutions in their reflections, although applied; it was based on the questions used in the questionnaire survey component of this research. There could be a case for establishing a country by country, or even global vision of what higher education's contribution to sustainable development might be.

It would also be pertinent to look at the higher education systems in those OECD non-member economies, such as India and China, which have such a huge impact on the future global economy and sustainable development.

Initiating and maintaining sustainability in the classroom, on the campus and in the community remains a major challenge on a global scale. In order to protect and preserve natural resources, sustain a vibrant economy and cultivate a high quality of life, higher education institutions must respond rapidly and create momentum for the movement. HEIs can achieve all this and contribute to 'green growth' in a number of ways from their role as an educator – contributing to skills needed to develop green economies, their role as a place for research and innovation – contributing to knowledge creation and underpinning business research and development to produce the green technologies and services for a green economy, but also in their role as a consumer of resources.

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ANNEX 1

12 Features of a sustainable society

Of natural capital

- 1.** In their extraction and use, substances taken from the earth do not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects (to humans and/or the environment)
- 2.** In their manufacture and use, artificial substances do not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects (to humans and/or the environment)
- 3.** The capacity of the environment to provide ecological system integrity, biological diversity and productivity is protected or enhanced.

Of human capital

- 4.** At all ages, individuals enjoy a high standard of health.
- 5.** Individuals are adept at relationships and social participation, and throughout life set and achieve high personal standards of their development and learning.
- 6.** There is access to varied and satisfying opportunities for work, personal creativity and recreation.

Of social capital

- 7.** There are trusted and accessible systems of governance and justice.
- 8.** Communities and societies at large share key positive values and a sense of purpose.
- 9.** The structures and institutions of society promote stewardship of natural resources and development of people.
- 10.** Homes, communities and society at large provide safe, supportive living and working environments.

Of manufactured capital

- 11.** All infrastructure, technologies and processes make minimum use of natural resources and maximum use of human innovation and skills.

Of financial capital

- 12.** Financial capital accurately represents the value of natural, human, social and manufactured capital.

Source: Higher Education Partnership for Sustainability and Forum for the Future (2003) *Reporting for Sustainability: Guidance for Higher Education Institutions*.

ANNEX 2

The questions

The following thirteen questions were dispersed to all HEIs participating in the study. The questionnaire captured good practice across sustainability themes, from resource extraction to governance systems. The responses from this survey helped to inform the case study organisation.

Question 1: How does your HEI contribute to reducing the extraction of natural resources?

Question 2: How does your HEI contribute to reducing the use of natural resources?

Question 3: How does your HEI contribute to improving biological diversity?

Question 4: How does your HEI contribute to improving the health and well-being of staff and students?

Question 5: How does your HEI contribute to building the learning and social skills of staff and students so that they are empowered citizens?

Question 6: How does your HEI provide access to varied and satisfying opportunities for personal creativity, well-being and recreation for all stakeholders?

Question 7: How does your HEI improve governance systems so that they are trusted by all stakeholders and accessible to them?

Question 8: How are your HEI's policies, teaching practices, research and third stream activities contributing to a shared understanding of sustainable development amongst internal and external stakeholders?

Question 9: How does your HEI support other businesses, the public sector and voluntary groups in society to promote stewardship of natural, social and economic resources?

Question 10: How does your HEI contribute to safe and supportive local communities?

Question 11: How does your HEI contribute to the development of infrastructure, technologies and processes that minimise use of natural resources and maximise use of human innovation and skills?

Question 12: How does your HEI ensure economic sustainability including the financial valuation of natural (e.g. the extra cost of green energy) and social capital?

Question 13: Could you please state the barriers and opportunities to implementing sustainable development at your institution and any policy suggestions you have.

ANNEX 3

Methodology

Study tour

A study visit was arranged in order to hold two half day workshops per partner organisation and a debriefing for senior management. In some cases this was delivered over two days but where time was short or participants had limited availability the workshops were completed in one day. The workshops were structured to achieve the following:

Day 1: Identification of each partner's strengths and priorities and recording of good practice examples;

Day 2: Clarification of a vision for HEIs optimising their contribution to sustainable development, identification of barriers to success and suggest policy solutions.

Half day workshop on day 1

This workshop followed the format developed by Form for the Future in its Higher Education Partnership for Sustainability:

- A. Models of implementing sustainable development were discussed in plenary and a shared understanding or understandings of higher education's contribution to sustainable development were identified.
- B. The self evaluation questionnaire results were presented to the group and the HEIs strengths and weaknesses identified in group sessions.
- C. In groups, there was a discussion of the vision of the HEI contributing optimally to sustainable development in ten years (a useful time horizon as it was far enough away to be ambitious but close enough to be relevant to people's jobs).
- D. Finally in plenary the opportunities and barriers to achieving the vision/s were discussed and some policy suggestions made for university leaders and government.

Half day workshop on day 2

The purpose of the second workshop was to broaden the discussion from the partner institution to the wider higher education system. All higher education systems are different and so key individuals may have been in agencies, non government bodies, local government or national government and some individuals or teams may have responsibility for more than one of these functions. However, it was essential that senior managers with the responsibilities listed below were invited:

- Funding locally, regionally and/or nationally;
- Planning locally, regionally and/or nationally;
- Regulating locally, regionally and/or nationally;
- Other interested Higher Education Institutions;
- Student representatives;
- Employers/professional bodies.

The agenda for the workshop was:

1. In a plenary, discuss the shared understanding of sustainable development from the first workshop.
2. In breakout groups there was a discussion of the vision of the HEI contributing optimally to sustainable development in ten years. From this point participants were asked to backcast (if this were achieved what happened the day before to make it happen and so on) providing landmarks at five years from present and two years from present.
3. The groups then considered the practical achievement of the visions and discussed the opportunities and barriers finishing with suggestions for policy instruments.

After the workshop a debriefing was held with the partner HEI to clarify:

- The good practice examples to be communicated;
- The strengths and weaknesses of the partner HEI;
- The barriers faced by the partner HEI;
- A vision of the HEI in the HE system;
- Policy suggestions at a national and international level.

Post workshop

The participants were sent a draft report of the workshop. The results from each country were analysed and a final report presented to IMHE and sent to all participants

ANNEX 4

Sustainability appraisal of a higher education institution's strategic plan

			Campus	Curriculum	Community
ENVIRONME	NATURAL	How does your plan contribute to the reduction of the use of non-renewables?			
		How does your plan contribute to the reduction of waste, emissions and persistent chemicals?			
		How does your plan contribute to the maintenance and enhancement of biodiversity?			
SOCIETY	HUMAN	How does your plan contribute to ensuring human health?			
		How does your plan contribute to the empowerment of individuals and promotion of lifelong learning?			
		How does your plan contribute to the encouragement of employability, creativity and recreation?			
	SOCIAL	How does your plan contribute to ensuring trusted governance and justice systems?			
		How does your plan contribute to the increase of mutual respect and positive values?			
		How does your plan contribute to the promotion of positive institutional change?			
		How does your plan contribute towards creating a safe and supportive living and working			

		environment?			
ECONOMY	MANUFACTURED	How does your plan contribute to the maximization of resource use efficiency through human innovation?			
	FINANCIAL	How does your plan contribute to the valuation of all forms of capital?			

Source: Higher Education Partnership for Sustainability and Forum for the Future (2003) *Reporting for Sustainability: Guidance for Higher Education Institutions.*

ANNEX 5

Sustainability appraisal grid illustrating what a higher education institution might do to contribute to sustainable development

What can the university (or activity) do to enhance the “stock” of the following resources or “capitals”?	Three ways in which a university manifests itself		
	As a business	As a place of learning and research	As a key member of the community
NATURAL The resources and services provided by the natural world	1. Use resources efficiently - Reduce energy and raw material use - Drive waste out of the system	2. Develop the new economy - Exploit teaching, research, business development opportunities in low-carbon, high human creativity economy	3. Conserve, enhance the environment - Subscribe to low-impact travel schemes - Increase biological mass and diversity (on campus and locally)
HUMAN The energy, motivation, capacity for relationships and intelligence of individuals	4. Attract and keep good staff - Create community of purpose for staff, students, other stakeholders - Be a values led organisation - Ensure healthy working culture and physical environment - Be active on diversity	5. Provide good student experience - Be a values led organisation - Ensure healthy working culture and environment - Enhance employability of graduates - Ensure sustainability literacy for all	6. Promote Lifelong learning - Mix on/off campus learning experiences for both students and community (work-based learning) - Clear learned paths in and out of higher education – from school, further education, work, non-working
SOCIAL The social groupings that add value to individuals (e.g. families, communities, parliaments, universities)	7. Provide good governance, management - Ensure clarity and coherence in strategic planning and well trained managers - Modernise charters, decision-making systems to ensure transparency and democracy	8. Anticipate future markets for graduates - Articulate and meet 21 st century challenges through teaching, research, knowledge transfer - Promote a vision of future that engages new generations - Prepare graduates for multi-	9. Respond to other policy agendas - Ensure equal opportunities/access, and other human rights - Understand employer demand in context of future needs - Renew purpose of HEI - Provide leadership for society in

		disciplinary approaches to problem solving	complex, rapidly changing times - Higher education to set as well as respond to agendas
MANUFACTURED The “stuff” that exists already – buildings, railways, etc. Can it be used in a way that requires fewer resources and more human creativity?	10. Demonstrate best value in use of estates - Ensure building design, refurbish, all estate management is best practice and for environment - Forge local partnerships (e.g. renewable energy generation)	11. Excellence in research and teaching - Integrate student learning with campus improvement, and community experience - Sustainability research/consultancy - Encourage innovation for sustainable design solutions	12. Promote community relations, outreach - Share sports, library, other facilities - Build portfolio of joint ventures for student, staff and local residents - Sustainable transport partnerships
FINANCIAL The money and stocks that enable us to put a value on, and buy and sell, the above resources. Are there ways that financial value can more accurately represent the real “cost” of using these resources?	13. Save money/be efficient - Use whole life costing - Invest ethically (e.g. pensions) - Provide incentives for adding value to physical resources	14. Compete internationally/regionally - Structure internally and make relationships to facilitate ideas-innovation-implementation process - Export models and programmes	15. Modernise risk management - Report on environment and social impacts as well as financial - Use procurement strategies to support local markets and ethical trade

Source: Higher Education Partnership for Sustainability and Forum for the Future (2003) *Reporting for Sustainability: Guidance for Higher Education Institutions.*