



28 - 29 JUNE 2005
NAGOYA, JAPAN

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Globalization and Education for Sustainable Development Sustaining the Future



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FOREWORD

by the Director-General of UNESCO

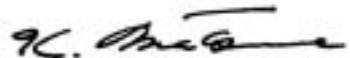
In 2004, the United Nations General Assembly recognized quality education to be a key parameter for a sustainable future when it declared the period 2005-2014 as the Decade of Education for Sustainable Development (DESD) and designated UNESCO as the lead agency for its international coordination and promotion. The Decade has a clear purpose, namely, that of highlighting the central role of education and learning in the common pursuit of sustainable development. As a framework for mobilizing collaborative action at international, regional, national and local levels, the Decade seeks to generate practical results through partnerships and joint endeavors.

Sustainable development is an ethical challenge as well as a scientific concept. Through Education for Sustainable Development (ESD), our aim is to acquire a better understanding of the complex interdependence between human needs and the natural environment, between socio-economic development and culture, and between the local and the global. The regional and sub-regional levels are critical for ESD. This is because sustainable development issues tend to transcend national boundaries and to coalesce around problems shared by neighboring countries. As the lead agency for the Decade, UNESCO is responsible for the international coordinating of efforts to integrate the theme of sustainable development into educational processes, both formal and non-formal, at all levels. In addition, UNESCO is contributing substantially to the Decade through its programmes in its main fields of competence - education, the sciences, culture and communication - and in particular through intersectoral activities. In regard to both coordination and programmatic action, UNESCO is working closely with the full span of stakeholders involved in ESD: governments, other UN agencies, civil society organizations, the private sector and the media as well as schools, universities, research institutes, academic experts and students.

The International Conference on “Sustaining the Future - Globalization and Education for Sustainable Development”, convened jointly by UNESCO and the United Nations University (UNU) on 28-29 June 2006 in Nagoya, Japan, proved to be a valuable occasion to consider the issues, challenges and opportunities associated with this theme. The meeting marked the third such joint conference organized by UNU and UNESCO to concentrate on how various aspects of human development interact with and are affected by globalization.

The importance of the Conference was further reinforced by the concurrent launch and adoption of the Asia-Pacific Strategy for the Decade, which had been developed in a participatory and interactive approach. A situational analysis of the Asia-Pacific region showed that ESD is still predominantly conceptualized by many stakeholders and decision-makers in the context of “environmental education” (EE). Moving from EE to ESD will be a major challenge for the Decade in the Asia-Pacific region.

This publication presents the contributions and outcomes of the stimulating two day gathering in Nagoya, where representatives of governments, academia and civil society gathered to share their experiences and develop their ideas about how to ensure ESD within the context of globalizing societies. I am pleased, therefore, to present the record of these proceedings and to express my hope that this publication will help to highlight the potential of the Decade for improving the quality of life in the present, without compromising it in the future. Through the Decade, in this region and across the world, we shall seek to support partnerships and collaboration that enable education to play its full part in ensuring that a sustainable planet and a safer world are passed on to our children, our grandchildren and their descendants.



KOÏCHIRO MATSUURA
Director-General of UNESCO

I. INTRODUCTION

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KOÏCHIRO MATSUURA

Director-General, United Nations Educational,
Scientific and Cultural Organization (UNESCO)

Koïchiro Matsuura is the Director-General of UNESCO. He was Chairperson of the World Heritage Committee of UNESCO (1998-1999), Ambassador of Japan to France and concurrently to Andorra and Djibouti (1994-1999), Deputy Minister for Foreign Affairs (1992-1994), Director-General of the North American Affairs Bureau at the Ministry of Foreign Affairs (1990-1992), Director-General of the Economic Cooperation Bureau at the Ministry of Foreign Affairs (1988-1990), Consul General of Japan in Hong Kong (1985-1988), successively Director of the General Affairs Division and Deputy Director-General of the Foreign Minister's Office (1982-1985), Director of the Aid Policy Division at the Ministry of Foreign Affairs (1980-1982), Counsellor of the Embassy of Japan, United States of America (1977-1980), Director of the Development Cooperation Division at the Ministry of Foreign Affairs (1975-1977), Director of the First North American Division (Political Affairs) at the Ministry of Foreign Affairs (1974-1975), and has assumed various other posts at the Ministry of Foreign Affairs of Japan.

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AND THE ROLE OF UNESCO

I would like to extend a warm welcome to you all, most especially to the distinguished speakers representing a variety of constituencies in the Education for Sustainable Development (ESD) movement in the region. Let me also thank the Nagoya University authorities for providing such an excellent venue for this event.

On 1st March of this year, at the United Nations Headquarters in New York, I was proud to officiate at the international launch of the Decade. It was a special occasion for the whole ESD movement, not least for UNESCO in view of its lead agency role bestowed by the United Nations General Assembly. The Decade is now being rolled out through launches at regional and national levels across the globe and I am delighted to be here for the Asia-Pacific launch here today.

The Decade has a clear purpose, that of focusing the spotlight on the central role of education and learning in the common pursuit of sustainable development. As a framework for mobilizing collaborative action at international, regional, national and local levels, the Decade seeks to generate practical results through partnerships and joint endeavours.

For UNESCO, ESD is a vital aspect of quality education which, as a key dimension of human resource development, makes a central contribution to meeting the challenge of sustainable development. In a year which sees the sixtieth anniversaries of the United Nations and UNESCO and which, next September, will witness the world's leaders meeting in New York to review progress over the five years since the Millennium Declaration, UNESCO believes it is essential that education and human resource development are accorded a high position on the world's development agenda. This is the frame of reference within which ESD and the Decade acquire their full meaning.

By requiring us, individually and collectively, to make difficult choices about how we live, sustainable development is an ethical and moral challenge as well as a scientific concept. ESD should help us to address this challenge. Through ESD, we should acquire a better understanding of the complex interdependence between human needs and the natural environment, between economics and culture, and between the local and the global. Ultimately, the Decade's goal is to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in attitudes and behavior that allow for a more sustainable and just society for all.

I. INTRODUCTION

The regional and sub-regional levels are critical for ESD. This is because sustainable development issues tend to transcend national boundaries and to coalesce around problems shared by neighboring countries. A regional launch like this one, therefore, is an important opportunity for mobilizing policy-makers, educators, experts, civil society, youth, children, parents, community leaders and the general public. ESD, indeed, should concern us all.

The Asia-Pacific region is vast and diverse. It includes some of the world's most affluent and most impoverished nations as well as the world's most populous and smallest countries. In population terms, it is the fastest growing region, with nearly two-thirds of the world's people. It also contains a large and diverse range of ecosystems, many of which are threatened. There are complex patterns of cultural, linguistic, ethnic and religious diversity, rooted in history and interwoven with poverty, conflict, urbanization, and migration as well as unique livelihoods and lifestyles. For ESD to be effective in this context, it must be addressed through locally relevant activities to reach all learners through all walks of life.

UNESCO took optimum advantage of the preparatory period prior to 2005 to mobilize support and generate momentum for ESD. This period enabled us to strengthen existing partnerships and establish new ones. The support we received from UN partners, Member States, international and regional agencies, international and national NGOs, universities and civil society has been truly inspiring.

The Decade is a vehicle of educational change and mobilization aimed at making sustainable development a concrete reality for all of us – individuals, organizations and governments.

UNESCO undertook to coordinate a Situational Analysis of ESD in the Asia-Pacific region. This Situational Analysis indicates that ESD is still predominantly conceptualized by many key stakeholders and decision-makers in the context of Environmental Education (EE). Moving from EE to ESD will be a key challenge for the Decade in the Asia-Pacific region.

Informed by the Situational Analysis and numerous other ESD initiatives in the region, the Asia-Pacific Regional Strategy for ESD will serve to guide the implementation of ESD throughout the region. It is an open document that may readily be revised and adapted in tune with the changing needs of the Decade.

Throughout all the preparations associated with the Situation Analysis and Regional Strategy, ownership of the Decade by the different actors has been enhanced by consultation and partnership. Key sections of the Regional Strategy were drafted by over 100 experts from more than 20 countries across the region at the participatory and interactive Strategy Workshop hosted by UNESCO, UNU and UNEP in February this year.

UNESCO has also entered into various partnerships aimed at promoting and implementing ESD. For example, an Asia-Pacific Regional UN Interagency Steering Committee for the DESD and an Asia-Pacific Regional Consultative Group for the DESD have been created.

As the lead agency for the Decade, UNESCO is responsible for coordinating the efforts of governments, educators and students to integrate the theme of sustainable development in educational processes, both formal and non-formal, at all levels. We also intend to work with civil society organizations, the private sector and the media to help them communicate the problems and requirements of sustainable development to the largest possible audience. UNESCO will undertake such activities as advocacy, vision-building and communication for ESD in the region during the Decade. Through its Asia and Pacific Regional Bureau for Education and other field offices, UNESCO is committed to mobilizing new stakeholders for ESD as well as building alliances and networks.

The Decade is a vehicle of educational change and mobilization aimed at making sustainable development a concrete reality for all of us - individuals, organizations and governments - in our daily decisions and actions. Through the Decade, in this region and across the world, we shall seek to support partnerships and collaboration that enable education to play its full part in ensuring that a sustainable planet and a safer world are passed on to our children, our grandchildren and their descendants. UNESCO invites you to work together towards this worthy goal.

HANS VAN GINKEL

Rector, United Nations University (UNU)

United Nations Under-Secretary-General

Hans van Ginkel has been the Rector of the United Nations University, Tokyo, since September 1997. He was elected President of the International Association of Universities (IAU, Paris) in August 2000 and served until July 2004. He is Vice-chair of the Board of Trustees, of the Asian Institute of Technology (AIT, Bangkok), Member of the Academia Europaea; Honorary Fellow of the Institute for Aerospace Survey and Earth Sciences (ITC, Enschede); and the former Rector of Utrecht University in the Netherlands. He serves as a member and officer in several professional associations and organizations. He holds a Ph.D. cum laude from Utrecht University (1979) and honorary doctorates from Universitatea Babeş-Bolyai, Cluj, Romania (1997), and the State University of California (Sacramento, 2003). His fields of interest are urban and regional development, population, housing studies, science policy, internationalization and university management. He has published widely on these areas, and has contributed extensively to the work of various international educational organizations.

Education serves as a powerful tool
for moving nations, communities,
and households towards a more
sustainable future.

MOBILIZING FOR SUSTAINABLE DEVELOPMENT

Since the Earth Summit in Rio de Janeiro, 1992, sustainable development has been high on the political agenda. Until recently, however, the role of education was not very well articulated. Neither was education defined as one of the major stakeholder groups in the UN Commission on Sustainable Development (CSD) process. Nine major stakeholder groups were identified, under which trade unions, youth, science, and business, for instance, were included, but not education. In fact, education is the peculiar sector in human activity almost everyone has an opinion about, because they went to school or maybe even to university, as a consequence of which expert opinions are often neglected. For instance, in the Earth Summit little attention was given to the opinion of the people who can really change education: the dedicated women and men in front of the classroom - the people directly involved in formal and non-formal education.

The recognition is there. Education is widely seen as one, large ray of hope for the global sustainability vision. Agenda 21, the world's first action plan for sustainable development, made it clear that many paths to sustainable development do exist. The document stated that work on multiple fronts was necessary: e.g. environmental protection, good legislation and governance, economic incentives, overcoming corruption, human rights and security, and creating infrastructure – from transportation to financial pillars. While there was much discussion and negotiation in (and after) Rio on these various key approaches, one path was adopted unanimously – the need for education, public awareness, and training. However, the people directly involved in education on a daily basis did not get involved adequately in the Rio process. Maybe they were teaching at the time the Earth Summit was held. Perhaps, the “world of education” was still too fragmented at that time and the initiatives for shared visions and joint action were still too recent.

In 1988, the European universities had created their Geneva-based Copernicus programme: the Cooperation Programme in Europe for Research on Nature and Industry through Coordinated University Studies. The acronym was chosen in relation to that of the Erasmus-programme, the first major programme of the European Union to enhance the international mobility of students between the member countries. A major aim in 1988 of Copernicus was also to enhance student mobility between East and West Europe, for the time being within the framework of university cooperation with regard to environment and development. In particular, universities in Poland and Sweden played a major role to move CRE-Copernicus forward. After the political change in East Europe, much focus was given to the development of manuals that could be used throughout Europe in some crucial areas of teaching like environmental law and environmental economics. It goes without saying that these disciplines both changed completely in character after socialism and with the increasing role of the European Union in environmental matters.

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At almost the same time, the foundation was laid for the Washington-based "University Leaders for a Sustainable Future" (ULSF) when the Talloires Declaration (1990) was developed. This ten-point campus sustainability action plan has now been signed by over 300 university presidents and chancellors, worldwide. And in 1991 (on 11 December) university presidents and senior officials from universities, governments, the business community and NGOs from five continents met in Halifax (Canada) to discuss the role of universities in improving the capacity of countries to address environment and development issues. They adopted the Halifax declaration based on the dedication of all universities to move towards concrete actions for sustainable development. Not all of these initiatives, however, were reflected in Agenda 21.

The efforts to advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired were not just aiming at specialists in the field. Rather, these efforts focused on informing and involving much larger groups of students, schools in primary and secondary education and the public at large. This trend was continued in the decade leading up to the World Summit on Sustainable Development (WSSD, Johannesburg 2002).

In 1993, some 90 international university leaders assembled at the 9th International Association of Universities (IAU) Roundtable in Kyoto and adopted the Kyoto Declaration. This is a declaration of principle in support of sustainable development as a dynamic and evolving expression of purpose to guide IAU and its 600 members in all their activities. In 1994, CRE-Copernicus officially presented the "University Charter for Sustainable Development", an effort to mobilize the resources of institutions of higher education to further the concept and objectives of sustainable development. In the discussions, attention was increasingly given to the responsibility of higher education institutions through teacher training and curriculum development for the quality and necessary re-orientation of primary and secondary education. This Charter has been signed now by some 300 universities in Europe. Higher education institutions are also working collectively, such as the Baltic University Programme that links 170 of such institutions from all 14 Baltic Sea Countries in research and education for regional sustainable development. Coordinated by Uppsala University, courses are produced with the expertise of institutions throughout the Baltic Region. At the managerial level, the rectors of these higher education institutions meet yearly to oversee the progress of the programme.

Another group of higher education institutions working to promote Education for Sustainable Development is the International Network of Teacher Education Institutions associated with the UNITWIN/UNESCO Chair on Re-orienting Teacher Education to Address Sustainability. About 30 higher education institutions from 28 countries have been working together since 2000. Each institution has experimented with changes in programmes, practices and policies in locally relevant and culturally appropriate ways. The array of activities they have undertaken is impressive.

For example, they have re-oriented courses to address sustainability, begun new degree programmes, created and published a journal, carried out research projects, exchanged faculty, and held conferences. Currently, members of the international network are forming regional and local networks to share experiences and expertise with other teacher education institutions and government ministries. At the request of UNESCO, in response to a directive from the UN Commission on Sustainable Development (CSD), this international network is now writing guidelines for re-orienting teacher education to address sustainability. These guidelines will be published as part of the UN Decade of Education for Sustainable Development (DESD).

These are just some examples of the many initiatives that were taken worldwide. Initiatives here in Japan, have contributed much to Japan taking a leading role in Johannesburg to promote ESD.

Individual institutions of higher education are already making great efforts to address ESD, thanks to the early start which goes back to at least 1988 in some parts of the world. Many are modeling sustainable practices and re-designing their campus policies. They are constructing far more energy efficient buildings and retrofitting existing buildings. Likewise, they are re-orienting their coursework and research to address sustainability. For example, in the European transition economies, the private sector is placing new demands on higher education institutions: "Certain sector companies, which produce the so-called "large systems", such as aircrafts, have to coordinate their efforts with thousands of subcontractors. All of this calls for new technical skills and managerial schemes. In particular, modern firms require substantial in-house capacity to recognize, evaluate, negotiate and finally adapt technologies available from different sources" (United Nations Economic Commission for Europe, 2003).

The challenge to universities to re-orient their management and business administration courses is vital to regional sustainable development outcomes. The IAU, the United Nations University (UNU) and UNESCO have been working as lead agencies on ESD for several years now with networks of higher education institutions, such as Copernicus in Europe, and they accomplished much prior to the start of the DESD.

The Earth Summit+5 in 1997 provided a major impulse for increased activity worldwide to all major stakeholders and actors in the promotion of sustainable development. The Earth Charter Commission was formed and the international drafting committee appointed. The Steering Committee of UNESCO's World Conference on Higher Education (WCHE, Paris, 1998) decided to focus one of the thematic debates on "Higher Education and Sustainable (Human) Development". The UNU was charged with the organization of this thematic debate. In its preparations UNU succeeded in bringing together fourteen different organizations, including networks, at the macro-regional and global level. This was a major boost to efforts to:

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- support international scientific and technical cooperation on sustainability, with special attention to the needs of developing nations (characteristically a student from Zimbabwe was invited, through the Copernicus network, to contribute to the debate at a time when his university was closed down);
- recognize and preserve the traditional knowledge and spiritual wisdom in all cultures that contribute to environmental protection and human well-being; and
- ensure that information of vital importance to human health and environmental protection, including genetic information, remains available in the public domain.

Soon after the WCHE, the Global Higher Education for Sustainability Partnership was formed (2000). The GHESP brings together the IAU, Copernicus Campus (the former CRE-Copernicus), the Association of University Leaders for a Sustainable Future (ULSF) and UNESCO. The partnership was officially launched as a Type 2 partnership at the WSSD in Johannesburg. The major joint project of GHESP is the Global Higher Education Sustainability Resource Project (GHESRP). The GHESRP is meant to provide a tool for higher education institutions worldwide, to accomplish their goals with regard to environment and development. It is an online resource which contains a variety of topics related to re-orienting curricula, pedagogy, green maintenance of campuses, etc.

During the WSSD, in fact, various initiatives were launched to strengthen the role of ESD. Not only was the GHESP launched as a Type 2 partnership. Also the UNU-Global Virtual University for Sustainable Development was presented by the Norwegian Government, Norwegian universities, UNEP GRID-Arendal and UNU. The Japanese as well as the Swedish Governments chose education for sustainable development as a spearhead for their contributions, and at their proposal, the United Nations decided to designate 2005 as the Year and 2005-2014 as the Decade of Education for Sustainable Development with UNESCO as the lead agency.

Also at WSSD, eleven of the world's foremost educational and scientific organizations, under the leadership of the UNU Institute for Advanced Studies (UNU-IAS), signed the Ubuntu Declaration which brought together for the first time science, technology and education for sustainable development. The Declaration strives to ensure that educators and learners from primary to the highest levels of education, taking part in both formal and non-formal education, are aware of the imperatives of sustainable development. Through the focused work of this network of networks, it is anticipated that more people worldwide will come to practice, in their work and life habits, the values and principles of sustainability.

The group of signatories of the Ubuntu Declaration (the Ubuntu Alliance) is jointly working towards:

- strengthening the role of educators in the CSD process as one of the major stakeholders;
- promoting communication and collaboration among scientific, technological and educational organizations by frequent exchange of information and views on their activities;
- facilitating the review and revision process of educational programmes and curricula at all levels of education for integrating the latest scientific and technological knowledge for sustainable development into educational programmes and curricula, and to develop mechanisms to continuously inform teachers and update programmes;
- promoting efforts to attract young people to the teaching profession;
- emphasizing the importance of ethical issues in education for building a sustainable and peaceful global society in the 21st century;
- promoting knowledge transfers in innovative ways to speed up the process of bridging gaps and inequalities in knowledge; and
- working towards a new global learning space on education and sustainability that promotes cooperation and exchange between education at all levels and among all sectors of society.

The participants in the Ubuntu Alliance, led by UNU-IAS (UNU's Institute of Advanced Studies) have worked closely with UNESCO to promote the DESD, and have contributed to the draft framework of the International Implementation Scheme for the DESD.

“Education for Sustainable Development” means what it says: it is not just environmental education or even sustainable development education, but education for sustainable development. It is not a topic that can be taught in a few weeks just at a certain age, but should rather be given attention in all sectors of education, and at all levels in relation to relevant, already existing subjects in an integrated manner. In this way ESD gives orientation and meaning to Education For All (EFA). EFA and ESD are two sides of the same coin. To develop the curricula and courseware needed – and regularly update these – and to inform teacher training and re-training in effective ways, the Ubuntu Alliance aims at an inclusive and flexible process, mobilizing all who have something to contribute in primary, secondary and tertiary (including higher) education. Specific attention will be given to online learning and the contributions of the media. The Johannesburg Plan of Implementation will give guidance with regard to the issues to focus on in particular, such as water, energy, health, agriculture and biodiversity (WEHAB) and, of course, the Millennium Development Goals (MDGs). The Earth Charter, too, gives important perspectives and concepts to build upon while constructing curricula and training teachers. The GHESRP will provide the high-quality resources and specific tools to individuals and institutions seeking to reorient higher education toward sustainable development. This will be increasingly helpful for all those aiming to develop good teaching materials to introduce concepts to sharpen insight and to improve

I. INTRODUCTION

knowledge by making use of relevant traditional knowledge and spiritual wisdom. The Ubuntu Alliance is also working hard to tailor existing knowledge in science and technology to the very different conditions and needs of the different parts of our mega-diverse planet, as well as to develop knowledge about new themes like access, benefit-sharing, and bio-diplomacy.

The process of the year and decade must be inclusive and flexible, the framework challenging and enabling, not limiting and harnessing. The challenge that might mobilize many and serve to give focus to their contributions might be to jointly create a global learning space for sustainability, based on regional centers of expertise. Regions are seen here as parts of countries, with common languages, as in Bretagne, Tohoku or Catalunya. The regional centers/clusters should include institutions of primary, secondary and tertiary education, research institutions, (science) museums, non-formal education, zoos/parks, etc. As it is important to mobilize many actors, prizes could be awarded for innovative, joint projects by two or more institutions from different sectors. The regional centers of expertise might be identified in a way comparable to the monuments on the world cultural heritage list. This would have the advantage that local/regional conditions can be fully taken into account. The DESD would in this way have a global network of such regional centers of expertise as a visible output. In the process, it would be possible to mobilize many, learn from their creative ideas, build on diversity and promote international cooperation in ESD. The regional centers and their mutual relations would form the global learning space for sustainable development; the major outcome of the DESD.

Education serves as a powerful tool for moving nations, communities, and households towards a more sustainable future. Therefore, the United Nations has declared 2005-2014 to be the Decade of Education for Sustainable Development. For over fifteen years now, institutions of higher education have been rethinking their roles, among others, to find new ways to respond to the challenges of sustainability and prepare future generations to deal with sustainability issues in their careers and lives. Higher education institutions play a vital role, not only in shaping the future by educating the professionals of tomorrow, but also by creating a research base for sustainability efforts, and by providing outreach and service to communities and nations. They are extremely well-placed to help achieve Principle Eight of the Earth Charter. At the same time, the Earth Charter is well-designed to inspire the people working and studying in higher education institutions to contribute to sustainable development.

ESD builds the capacity of nations to create, broaden, and implement sustainability plans. ESD improves sustainable economic growth by improving the quality and skills of the workforce, while addressing the overarching need for environmental integrity and social justice. ESD also creates an informed public that can support enlightened environmental, social, and economic policy and legislation and raises the quality of life for all members of society.

ESD has four major goals: (1) improve access to quality basic education, (2) reorient existing education to address sustainable development, (3) develop public understanding and awareness, and (4) provide training programs for all sectors of private and civil society. Emerging challenges such as globalization call for graduates of higher education to understand and address issues inherent in the quest for a sustainable future. ESD is needed around the world to address difficult sustainability issues such as more sustainable production and consumption patterns and the education of hard-to-serve populations. It is obvious that globalization adds to the challenges as well as the opportunities for ESD.

The Regional Centers of Expertise (RCEs) on ESD proposed by UNU will contribute to developing innovative ways of collaborating among higher education institutes, primary and secondary educational systems, local governments, and other regional stakeholders. The RCEs will assist with the vertical alignment of curriculum from primary through university education and with linking formal and non-formal sectors of the education community. This alignment and linkage is essential to the success of a holistic ESD programme for all citizens in the region. Institutions of higher education are seen as central to the development of an integrated regional approach to ESD, bringing the best of knowledge from the natural sciences, social sciences, and humanities and integrating this knowledge with the best of educational practice of their community and regional partners. To facilitate communication, RCEs will be linked with a Global Service Center for the RCEs that will, among others, house the GHESRP project, an online repository.

Together, RCEs from around the world will constitute a Global Learning Space for Sustainable Development (GLSSD). RCEs will share their strategies, techniques, project descriptions, and other efforts amongst themselves and with organizations involved in ESD. The RCEs will also promote international cooperation in ESD. This sharing and cooperation will be made possible and efficient through the use of integrated computer technologies and facilitated by the RCE-Global Service Center. To reflect regional variations in ESD, UNU, in the framework of the Ubuntu Alliance, will promote the development of RCEs as parts of the GLSSD in a way that maximizes cultural and geographic diversity. At this UNU-UNESCO conference on "Globalization and Education for Sustainable Development" in Nagoya, 28-29 June 2005, the programme to promote the development of RCEs and GLSSD will be launched. Six initiatives will be presented, based in Toronto (Canada), Heerlen (Netherlands), Sendai (Japan), Suva (Fiji), Penang (Malaysia) and Kumasi (Ghana). Our aim is to have at least twenty strong RCE initiatives by the end of 2006. At the end of the UNDESD in 2014, partnerships for ESD, created through the RCE effort will flourish around the globe. The RCEs and GLSSD will most likely be the most tangible and stimulating outcome of the UNDESD. That is our goal and hope.

TOSHIO KOJIMA

Senior Vice-Minister of Education, Culture, Sports,
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Toshio Kojima is Senior Vice Minister of Education, Culture, Sports, Science and Technology, and a Member of the House of Representatives. He has been Parliamentary Secretary for Foreign Affairs (2001-2002), Parliamentary Secretary for Defense (2002-2003), Deputy Secretary-General, Liberal Democratic Party, Chairperson of the Subcommittee on Defense Policy in the National Defense Division.

JAPAN AND THE DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

How can we make the earth a better place? That is the most important question for human beings to tackle today. The key to this issue is the word “sustainability”. Based on the recognition that the amounts of all resources on this planet have limitations, we must consider matters such as maintenance of necessary resources, preservation of the environment, and issues of peace and security for future generations. As the world’s population increases, we also face eclectic and widespread problems related to food, energy, poverty, and health. These problems know no boundaries. In other words, it is necessary for every citizen to “think globally and act locally”, taking these problems as global-scale issues.

In terms of the environment, which is one of the crucial components of Education for Sustainable Development (ESD), various actions are being undertaken in Japan with special attention to the idea of “earth-friendliness”. Nationwide efforts are being expanded year after year, including saving energy and recycling resources in daily life, curbs on the mass consumption of daily goods, and development and production of commercial goods with careful regard for preservation of the environment.

Wangari Maathai, the 2004 Nobel Peace laureate, visited Japan this past February and was impressed by the Japanese word “*mottainai*” meaning “still valuable to use, not necessary to throw away”. I was very delighted to hear that she launched an activity to disseminate this word to the rest of the world. From ancient times, Japan has had an earth-friendly way of living, as represented by the word “*mottainai*”, however, it is something we are in process of forgetting in this era of mass consumption. Changes in the way of living and in consciousness are needed not only in the field of the environment, but also in the diverse fields where we promote sustainable development. Education plays a core role here. Consequently, I believe it is important that international organizations, national governments, industry, NGOs and local citizens learn while in mutual cooperation with each other internationally and domestically and that they take action with an awareness that each individual is responsible for constructing a sustainable global community.

Let me shift your attention from the perspective of Japan to that of the Asia-Pacific region. While it is very difficult to generalize about this vast region, it is certainly characterized overall by its continuing rapid economic development and remarkable growth in energy consumption. On the other hand, it is a region where diverse cultures and ways of living have long

We must deepen our collaboration to achieve the common goal of constructing a sustainable society.

been rooted in coexistence with nature; not in the idea of conquering it. In other words, it is a region where the wisdom of living in a sustainable fashion was traditionally passed on through generations and has continued to survive. Therefore, I believe that the foundation for ESD lies in the Asia-Pacific region, and I very much hope that examples of success will be transmitted from the Asia-Pacific region to the world over the next ten years.

Regarding UNESCO activities, community learning centers have already been established to promote "Education for All" throughout the Asia-Pacific region. These community learning centers play a crucial role in literacy education and vocational training in areas where sufficient school education is hardly provided. I believe that these activities at the community level will be extremely effective in promoting ESD.

As for our country, we have exerted efforts to cooperate in capacity-building, development of educational curricula and materials, and HIV/AIDS prevention education to achieve Education for All, especially in the Asia-Pacific region through bilateral educational cooperation and UNESCO. Also, for the promotion of ESD, we are actively cooperating with UNESCO and will contribute 200 million yen to UNESCO Funds-in-Trust. In particular, we will support the development of educational materials and practical activities for local communities.

It is necessary for all those concerned, from international organizations, national governments and bodies, education, science, industry and NGOs to mutually support and deepen collaboration to achieve the common goal of constructing a sustainable society. I hope that activities undertaken not only in the Asia-Pacific region, but also at the global level in the next ten years will open the way to a bright future for the world. Furthermore, I believe that such activities have to be continued even after the decade has ended.

MUTSUYOSHI NISHIMURA
Ambassador for Global Environmental Affairs,
Ministry of Foreign Affairs, Japan

The development of hybrid automobiles and the exploration of biofuels as new energy sources are examples of the ways in which we are applying technology to approach environmental problems.

COOPERATING FOR A SUSTAINABLE FUTURE

As you may well be aware, the Decade of Education for Sustainable Development launched in January 2005 emerged from Prime Minister Koizumi's proposal, based on the recommendations of a Japanese NGO, to the World Summit on Sustainable Development in Johannesburg. The proposal was adopted by the participating nations and in that same year, by the United Nations General Assembly.

The idea of sustainable development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" derives from the 1987 Report of the World Commission on Environment and Development. It was this idea, that the environment and development do not represent mutually exclusive interests, which spurred the Prime Minister's desire to see the idea of sustainable development concretized through education. Such thinking takes the world's energy problems for its backdrop. At present, the energy we will require to meet our needs in 2030 will be at least 1.7 times what it is today. Given the current rate at which we are using oil, natural gas, uranium and other such natural resources, we will run out by the middle of this century. As a developed country, we practice mass production and mass consumption, producing massive amounts of waste. Sooner, rather than later, we are going to be faced with the irreversible consequences of our comfortable lifestyles. Therefore, it is of utmost import that we change our ways of living before it is too late.

We are already making some progress towards this necessary change. The development of hybrid automobiles and the exploration of biofuels as a new energy sources are some of the examples which spring to mind most immediately as ways in which we are applying technology to approach environmental problems. In addition, we are actively promoting the "Three Rs", a campaign designed to encourage people to reduce their consumption, reuse items and to recycle their waste. Of course, the 2005 EXPO Aichi has highlighted these practices, while promoting a general theme of increased concern and respect for the environment.

When promoting education for sustainable development, it is essential that we assure local ownership which allows for the regional variations that make teaching practical and appropriate to the environment. At the same time, we must encourage awareness that our community-based actions and efforts are globally linked, for better and for worse. Certainly, in order for this Decade of Education for Sustainable Development to succeed, we must assure cooperation not only at the policy level, but also among local government, civil society, NGOs and the media to strengthen networks and foster cooperation towards our mutual goals.

SHELDON SHAEFFER

Director, UNESCO Bangkok

Sheldon Shaeffer is Director of UNESCO Bangkok. Since 1980, Mr Shaeffer has worked in several international organizations. From 1980 to 1990 he served as Associate Director of the Social Sciences Division at the International Development Research Centre (IDRC) in Ottawa where he was in charge of the Population, Education and Society Programme. He then served as a senior research fellow at the International Institute for Educational Planning (IIEP) in Paris (1990-1993). He then worked with UNICEF, first as regional education adviser in Bangkok (1994-1998) and then as chief of the Education Section at Headquarters in New York (1998-2001). Mr. Shaeffer has also worked in several positions in the area of education in Malaysia and Indonesia, and as the programme officer for education and culture at the Ford Foundation in Jakarta (1975-1977).

STAKEHOLDERS IN THE DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

Throughout UNESCO's preparations, ownership of the Decade of Education for Sustainable Development (DESD) by international agencies, governments, the media, the private sector and civil society have been enhanced by consultation and partnership. UNESCO has also entered into some formal partnerships towards promoting and implementing Education for Sustainable Development (ESD). In February 2005, the Director-General of UNESCO and the Executive Director of UNEP signed a joint statement recognizing the important role played by education in poverty reduction, economic growth, improving the capacity of people to address environmental challenges and upholding social and cultural values in a diversified world. In this statement, it was agreed that UNESCO and UNEP would undertake to further catalyze stakeholder participation in supporting the development and implementation of the Decade in a variety of ways. In 2004, UNESCO and the World Conservation Union (IUCN) agreed to develop a joint proposal for a three-year project that will engage stakeholders in selected Asia-Pacific countries in a process of defining ESD indicators. A national framework of indicators is to be constructed for use as a planning tool for monitoring and for evaluation.

Governments at all levels, including local, national and intergovernmental groups at the regional and international levels, have a significant role to play in contributing to the success of the DESD. The involvement of UNESCO National Commissions in the DESD is imperative. Although roles differ from country to country, where possible, National Commissions should strive to play a coordinating role with other national government agencies.

The reorientation of existing programmes is essential to the success of DESD. Ministries of education have a crucial role to play in facilitating the reorientation of education systems to accommodate and support the holistic, or "whole school approach" of ESD, where sustainable development is seen as a context for delivering existing aims of education and not as a competing priority.

There is a need to acknowledge the value of higher education institutions in the development of human resources for ESD. Roles for higher education institutions may include education of future leaders about ESD, educating and training school teachers, and conducting action-oriented research for sustainable development.

Youth have always been a major force in initiating change and as such must be involved in ESD planning and decision making processes.

Non-formal learning offers ways of bringing organized educational opportunities to a diverse range of learners, from rural women to out of school adolescents to redundant workers and the retired. Non-formal education programmes are most often those most closely linked with direct application and functional outcomes.

Environmental Protection and Management is identified as a core issue in the Asia-Pacific by researchers for the Situational Analysis of ESD the Asia-Pacific. This is appropriate, as the region contains a large and diverse range of ecosystems, many of which are threatened. Preliminary findings from the Situational Analysis indicate that ESD is still predominantly conceptualized in the context of Environmental Education (EE) by many key stakeholders and decision-makers. Although much can be learned from successful EE initiatives, especially at the grassroots level, it is imperative that stakeholders understand the unique holistic and cross-cutting nature of ESD. Moving from EE to ESD will indeed be a key challenge for the Decade and the support and commitment of environment ministries and others working in environmental fields are instrumental to its success.

Media and advertising agencies are key stakeholders in promoting the broad public awareness and ownership required to ensure that ESD achieves a wide impact on a global scale. Media organizations play an integral role in creating awareness and developing public ownership of the ESD vision. The ownership will result in a sense of social responsibility and a consciousness of how actions affect the lives of others. In addition, the media can play a key role in highlighting critical and locally specific issues relating to ESD and sustainable development, engaging in and stimulating debate, and disseminating information to the public as well as in the transformation process of moving from EE to ESD.

Implementing ESD requires widespread advocacy and a responsible media committed to encouraging informed and active citizens. Linkages established between the media and all other stakeholders, including the private sector, NGOs, school systems, policy makers and faith-based advocates will also be important for the Decade. In linking with the private sector, for instance, media coverage can focus on successful corporations that adhere to triple bottom line reporting (that takes in social and environmental factors as well as economic factors) to persuade non-complying firms to meet financial, social and environmental accountability.

ICTS are critical to media involvement in ESD because they are a means of linking distant partners, storing data and sharing information and news.

The private sector is an essential actor for successful promotion of ESD, both during and after the Decade. Local, national and multinational companies must actively engage in ESD. Ideally, the private sector would be fully engaged in national processes, since business is central to ESD in two specific ways:

- changing lifestyles, by promoting sustainable consumption and espousing sustainable production;
- delivering knowledge, both through its advertisements and its capacity to educate.

Improving technology and the production process in an environmentally-friendly manner and, at the same time, creating employment opportunities and offering education and training to the workforce and neighboring communities should be on the agenda of every responsible company. A main concern for ESD is the improvement of the quality of life through efficient production and rational use of natural resources, reduction of waste and the enhancement of services. This demands the involvement of governments, business, technicians, communities and households.

Civil society organizations and NGOs are key stakeholders in the Decade because of their relationship with, and knowledge of, the grassroots level. These groups have thus far been playing significant roles in the Asia-Pacific region to promote sustainable development and ESD. The functions of civil society and NGOs towards ESD include:

- public-awareness raising, advocacy campaigns and lobbying;
- consultancy and input into policy transformation;
- delivering ESD, primarily in non-formal settings;
- participatory learning and action;
- mediation between government and people.

Youth are identified as a key stakeholder group in both UNESCO's draft International Implementation Scheme for the UN Decade of ESD as well as the Regional Strategy for the Decade in the Asia-Pacific. In addition, results from UNESCO's Situational Analysis of ESD in the Asia-Pacific identified the strong role that youth can play in promoting and implementing ESD in the Asia-Pacific region. Youth have always been a major force in initiating change and as such must be involved in ESD planning and decision making processes.

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WHAT IS EDUCATION: THE VIEW FROM SPACE

LÍDIA BRITO

Eduardo Mondlane University, Mozambique

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ESD AND THE ROLE OF HIGHER EDUCATION AND RESEARCH: A SOUTHERN VIEW

In countries such as Mozambique, we face a paradox. We have wonderful resources: first and foremost among them are our people, who are bright, open-minded and capable of doing what is needed to move forward; secondly, we have natural resources, both renewable and non-renewable, including our forests, prawns, gas and coal. However, despite these resources, we are very poor.

We need to guarantee quality education for all so that every citizen can participate in the selection and pursuit of the best path for the sustainable development of their community and their country.

What is the reason for this paradox? I believe that we are trapped in a vicious circle, a helix that pulls us downward, deeper and deeper into poverty, and keeps us from developing. Poverty can be defined in many ways. For me, it is the inability to use your own resources. It is this inability that makes you poor and that will keep you poor. Living in poverty means that you do not have effective access to resources and services, such as education, therefore, you are illiterate. Without access to the knowledge that helps you to eat an adequate diet or understand how you can prevent a disease, your health deteriorates. Because you are ill, your productivity decreases, as does the quality of your products. If you do not have knowledge about improved seeds, about new production techniques, and about markets, you produce less. As a result, you fetch lower prices and less income, and you are drawn further down into this poverty trap.

It is, however, possible to break this cycle. It takes a vision of development that is people-centered and inclusive; a vision that is based on local realities and that takes advantage of local knowledge and the capacity for innovation; a vision that stems from the country's potential to solve global issues and that strives to create a culture of science and technology. Today, more

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then ever, we are able to participate actively in the global movement, to appropriate and produce new knowledge and technology, thereby strengthening our cultures and building our identity to achieve a better livelihood for all. This means investing in education. We need to guarantee quality education for all so that every citizen has the capacity to participate in the selection and pursuit of the best path for the sustainable development of their community and their country.

Sustainability implies a process that is dynamic and evolving with many dimensions and interpretations. If we look to sustainable development as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs,” as defined by report of the World Commission on Sustainable Development (1987), it is clear that the actual development model is not sustainable and is incapable of addressing the rise of poverty in the world. We need a new model of development or even several models that are interlinked and interdependent and which reflect locally relevant and culturally appropriate visions of the world.

Sustainable development means that we need to embrace the values, behaviors and lifestyles required for a sustainable future. We need to transform mentalities and visions; and be able to transform those visions into reality. It requires that we build scientific and technical skills and that we develop the social support necessary to apply them. It is about building up conviction and commitment to pursue sustainable development; it is about using diversity to sustain growth.

The transformation of mentalities and visions and the capacity to build the necessary scientific and technological skills emphasize our need to invest in education. As stated in the UNESCO Draft Strategy for ESD (2004), education is the primary agent of transformation towards sustainable development. Education is more than the transfer of knowledge and skills from the teacher to the apprentice, it is about building up human capital and social cohesion that will support decision making about our common future.

A people-centered vision implies the definition of clear development priorities and good governance to guarantee access to services such as education, health, electricity and clean water. This vision demands the knowledge and technology that can bring the innovation and higher productivity that will attract investments, create jobs, increase market shares and promote economic growth.

In Mozambique, we have followed this path and the first results are encouraging. In the last five years the poverty level has decreased by 15% (from 69% to 54%). Through our Poverty Reduction Plan (PARPA) we have defined the following areas as development priorities: education, health, infrastructure, agriculture and rural development, economic growth, good governance,

economic management, environment, communication and participation, investments in priority sectors. These priorities reflect the need to take into consideration the challenges of globalization which we must face. Globalization affects many sectors of society and its mechanisms are primarily communication and trade. Its most tangible institution is the WTO, where the different nations negotiate trade agreements over a large variety of assets. It is also common knowledge that many contest the contents of some of these treaties as biased against the poor: stronger nations compete with weaker ones because they possess a better educated workforce and more productive industries, whereas their capacities to support their producers render trade unfair. Nevertheless, we should recognize that globalization and liberalization also offer many opportunities, even to developing countries.

The challenges that globalization poses to the developing world and to Africa, in particular, are amplified by the advances in information and communication technologies, driving forces of today's knowledge society. In this society, it is the capacity to acquire, appropriate and produce knowledge which will guarantee independence and social, cultural and economic development to the nations and their peoples.

Today, for example, the best market is not necessarily the nearest one, but the market in which we can supply the product or service in a timely fashion, with quality and in quantity, at affordable and competitive prices. More than half of the products traded in the international market are high or medium technology intensive. Many of our graduates study abroad or through distance learning programmes offered very far away from home.

The knowledge society and the phenomenon of globalization pose special challenges to our countries, as developing nations. They include:

1. The availability on the national market of skilled labor able to adopt to new knowledge and technologies. This labor force needs to have the capacity to teach itself, and countries need to foster an environment that promotes and offers continuous learning opportunities;
2. The identification of potential products and services that a country can offer with comparative advantages, and the transformation of that potential in real development opportunities for the people of that country;
3. Good governance practices that promote democracy and active participation by citizens in decision-making processes;
4. A solid economic and financial system that promotes entrepreneurship and development;

In light of these challenges, it is no exaggeration to state that at the beginning of the twenty-first century, the role of higher education, in particular that of universities is more important than ever before. It is then important to ask ourselves how institutions of higher

education can support their countries to face these challenges successfully, and what changes need to be made in order to help them fulfill their crucial role.

Higher education plays a critical role in development at the national, regional and global levels. In higher education, we train our young people to develop a critical mind and to acquire the capacity to act. We are also the trainers of teachers, researchers and innovators, as well as political, social and business leaders. We are also a resource for knowledge and know-how, and most importantly, we are the institutions - the national institutions - which can most efficiently form links with international pools of knowledge. However, in our developing situation, the dimensions of change are ever-increasing the pressure on our national systems.

In Africa, higher education faces particular challenges, including:

- **Increasing demand for higher education:** over the last decade, demand for higher education has been increasing constantly throughout the world. The increasing and changing demand for higher education requires the adoption of new training models, which will serve both real development needs and the desire for further training. Life-long learning-models, developed in many parts of the world, probably constitute a more adequate strategic option than the expansion of traditional forms of higher education.

- **Inequalities in access:** despite the increased capacity to absorb new students, we still have a long way to go before reaching gender parity. The percentage of female students is still too low and for female graduates, the situation is many times worse. Furthermore, higher education candidates coming from low-income families and rural settings are less likely to be accepted as new students at our universities, which thereby widens the gap between the haves and the have-nots.

- **Need to align university activities with development plans:** institutions of higher education, principally in Africa, need to align their own plans with the development plans of their societies so that they can contribute actively to development and supply the critical mass to evaluate the path followed and supply alternative paths towards sustainable development.

- **Rapid changes in technology:** curricula and technical infra-structure have to be updated on a constant basis so that students are not already obsolete upon graduation. Institutions of higher education have to foster the adaptation and production of technology.

- **Changing labor markets:** new investments in poor sub-Saharan countries such as Mozambique are hampered by a mismatch between skills and demand from the labor market. University graduates are often too academic in their outlook. Expanding technical training and connecting it to higher levels of education may constitute one adequate response. The training should prepare graduates for self-employment. It will be necessary to develop new teaching approaches capable of catalyzing the relationship between higher education and the private sector to better prepare graduates for their professional lives.

- **Integration in the national innovation system:** universities still tend to be too isolated from the rest of society. They need to be connected to society through partnerships with the private sector and civil society so that they can stimulate technical innovation. Universities should be preoccupied with the generation of new ideas and their transformation into concrete projects and enterprises, while also responding to the need for innovation surrounding economic activities. It is fundamental that we develop networks of sustainable development that link research centers and universities to other actors in development, as an important tool to tap local knowledge and innovation capacities available in society.

- **Higher Education and WTO/GATS:** we face a world where inequalities in the distribution of benefits are increasing. This global movement is associated with the increasing mobilization of lecturers and improved communication technologies that are opening up our countries to transnational universities in an unprecedented fashion. These universities feel less need to invest in domestic capacity building in the (developing) countries where they operate and are less prepared to provide relevant education for the local needs. National higher education systems have to adapt themselves in such a way that allows them to respond adequately to this challenge. They will have to engage in strategic alliances involving partners (in the South and in the North), which will guarantee them access to the knowledge and excellence they need in order to improve their performance. These partnerships could assume the form of networks around centers of excellence, which are geared towards the building of capacity and quality of the partners rather than to the concentration of resources in centers of excellence at their expense, as is frequently the case. These are networks of excellence, which have an impact on the sustainable development of the institutions involved and their communities.

- **The creation of system regulatory mechanisms:** Although market mechanisms are penetrating higher education and cost effectiveness is increasingly important for individual institutions and for governments, it would be an error to leave the development of tertiary education to market mechanisms alone. This is even more important because of the expansion of transnational higher education. Political and administrative interventions and regulations are needed to safeguard international quality standards in the national system, especially in countries with relatively young and weak national systems. We need to strike a balance, and national governments have to prioritize higher education to ensure the constant improvement of quality of our higher education systems.

The challenges highlighted require that institutions of higher education possess adequate research capacities. This implies that we need to create an enabling environment for different scientists to work together and to share scientific knowledge. It will lead to the identification of common interests; a better understanding of impacts; wider information gathering and stronger dissemination of results; and better access to resources through the sharing of facilities.

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However, institutions of higher education and research centers at the national, regional and international levels must work with each other through networks. This step towards institutionalized networks will bring more than sharing: it will move towards the creation of a common research agenda for sustainable development; it will mobilize more human capacity and more resources, creating synergies for institutional growth and ensuring sustainability.

Furthermore, it is not enough to develop centers of excellence, is not even enough to build "Networks of Excellence", as they include only knowledge producing institutions. The centers of these networks, each one of them, should be embedded in their own society. The centers should develop partnerships with their communities, governments and production sectors so that the flow of knowledge is multi-directional, so that creativity and innovation have a social basis that sustains growth. It is the social contract with science needed for sustainable development. These networks should support endogenous capacities and use diversity to accelerate growth.

The role of knowledge networks in linking research centers, schools, community-based organizations, enterprises, media, and government agencies is fundamental. These networks will be prime channels for the necessary links between the different actors in development, ranging from communities to schools, to academia, to the private sector and government.

They will bring new knowledge to communities and at the same time will capture the indigenous knowledge that exists in the communities. To have local innovation and to tap indigenous knowledge, we need to develop a culture of science, and we need people's full participation in knowledge production. Scientific programs have to be based in local realities and need to address the common good; they should tap local knowledge and mobilize innovation capacities within the community. Therefore, institutions of higher education need to be more open to society and its needs. These centers too often remain isolated from society. They need to be connected through partnerships with the private sector and civil society in order to provide the stimulus for technical innovation. Universities should be preoccupied with the generation of new ideas and their transformation into concrete projects and enterprises, and they should also respond to the need for innovation in existing economic activities. It is fundamental that we develop Networks of Sustainable Development that link research centers and universities to the other development actors, because they represent an important tool for drawing upon local knowledge and society's capacities for innovation.

In order for higher education in the South to fulfill its role, we need to invest so that we can increase access to quality education and build strong national education systems, which include institutions of higher education with development-oriented outlooks. We need, therefore, to improve research and development through networks of excellence and direct funding to research infrastructures; we need to invest continuously in curricula development and to support

links between knowledge-technology and practical solutions to everyday problems (Networks of Sustainable Development). It is important to maintain the cycle: Education - Research - Education.

Certain issues deserve further attention: the roles of governments must change in order to build the necessary environment for sustainable development. Governments should promote good governance. They should involve society in clearly defining development priorities. They must assume the role of a challenger, of an integrator and facilitator, concerned about the integration of important developmental policies such as education, science and technology, ICTs, industrialization and economic infrastructures. They should carry out strategic public investments; engage in public-private partnerships and partnerships with civil society that will support innovation and creativity.

Social actors should be more involved in partnerships with government and research centers, building up networks that will improve access to quality knowledge for development, particularly through the media. A free media is essential to preserving the plurality of information and guarantees diversity of thought. In developing countries, the combined use of traditional and modern media disseminates public information and is additionally responsible for fostering social development and cohesion, ensuring the participation of all in the building of a knowledge society.

Economic actors should participate more in the public debate, be involved in national development through public-private partnerships, and exercise corporate responsibility.

Higher education's leadership should know what they have to do in order to meet the challenges of the future. Institutions and their leadership should have an in-depth knowledge of the countries' needs and priorities. They have to be open to the society of which they are a part and they need to participate in national, regional and international networks for sustainable development. Leadership has to understand the urgency of higher education reform and share the values and common goals important to that process. University leadership must be prepared to act as role models in terms of respect for humanistic and scientific values, their management style, their treatment of staff and students, and in terms of the example they set for society as a whole. Higher education institutions have to realize that it is their duty to support efforts to transform primary, secondary and technical education so that these institutions produce graduates with vocational skills attuned to the labor market as well as good candidates for higher education.

It is fundamental to promote South-South cooperation and to reform North-South cooperation. We need to build strong partnerships based in mutual benefits. We can come much nearer to the dream of creating a common vision for development by building bridges of

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friendship and knowledge between our people and cultures; by building a common understanding of the challenges we are facing; and by building a common language and approach to respond to these challenges.

Therefore, bi-lateral and multi-lateral agencies play a very important role in this process. The first important requirement is that these agencies understand our needs and share our vision of development. The development of our countries requires that all of us have a seat at the table - a round table – to discuss the way forward as peers, neither as developed and underdeveloped, nor as rich and poor, but as people of good will and knowledge who share the same desire for a just world. We believe that fair trade is an option in commodity trade. Similarly, we believe that it is possible to design a framework that will guarantee that the liberalization of trading in higher education that remains open to the interests of developing nations. Increasing development aid for higher education and increasing the support for basic and applied research in our countries will benefit not only our countries, but the whole world. Strengthening national systems of knowledge and higher education will contribute to the consolidation of peace and prosperity and to the elimination of terrorism and injustice.

In order to build an enabling environment for higher education in the South, we need to have leadership, at different levels, that will allow us to build a shared vision. Our joint conviction to these development pathways will help us to clearly define our development priorities. This is important because we need to have ownership of these programs. It takes a lot from the country to invest in higher education when resources are so scarce. This means that we need to involve our people, and our societies, who need to support us as we advance. It is also very important that governments and their development partners increase funding for higher education and research. This will show commitment to our vision and our development priorities. Most importantly, let us make sure that we maintain high ethical standards, without which we cannot build true partnerships.

This is about constructing a knowledge society that nurtures a culture of science, where the individuals are committed and proactive, supported by formal and informal education systems and local knowledge systems, and linked by networks that promote entrepreneurship in the cultural, social and economic spheres.

In Mozambique, we are concerned about these issues. Therefore, our policies are designed and implemented accordingly. We prioritize the education system, aiming at functional literacy and life long learning opportunities for all; we stimulate knowledge partnerships and business-academia-research links, promoting a culture of innovation, particularly in small and medium sized enterprises.

Finally, let me say that the way forward is not an easy one: the role of government has to change, the roles of the social and economic actors have to change, and, most importantly today, the role of higher education has to change. We are still only at the start of this long road; we do not have the answers but we do have a vision of where we want to go, and the will to move forward.

Just over ten years ago, Mozambique emerged from many years of war, and embarked on the road of democracy. The climate of peace and reconciliation that we live in today has been crucial to the progress achieved to date. It is our strong desire that this climate should be a global one. We are aware that desire is not enough and that hard work is required to build comprehension and solidarity, compassion and respect for the differences that unite us.

We are all responsible for building a fairer and better world. Therefore, we need partnerships and networks at the national, regional, continental and global levels. That is why it is so important that we are here today.

CARL LINDBERG

Chairman, National Committee on Education
for Sustainable Development, Sweden

Carl LINDBERG is the former Deputy State Secretary of the Ministry of Education and Science, Sweden. He was member of a high-level panel that advised UNESCO on the UN Decade of Education for Sustainable Development in 2004. As Chairman of the National Committee on Education for Sustainable Development (2003-2004), Lindberg was responsible for the international consultation "Learning to Change our World" on Education for Sustainable Development and for the report "Learning for Sustainable Development". Lindberg also served as a political official for the Social Democratic Party's Members of Parliament in the Standing Committee on Education and Science (1989-1994), Press Officer for the Minister of Education (1985-1989), and Vice-President of the Swedish United Nations Association (1984-1986).

FOSTERING GLOBAL RESPONSIBILITY THROUGH ESD

It is a great pleasure and honor for me to take part in this important seminar. I would also like to say how much I appreciate the vision and work of those who took the initiative and arranged this conference, so as to draw attention to the great importance of Education for Sustainable Development (ESD) for the future of humanity. It is splendid that this is happening in the very first year of the United Nations Decade of Education for Sustainable Development, which was a result of the much appreciated initiative taken by the Japanese government ahead of the Johannesburg summit.

For many countries and companies, the rapid and vigorous globalization that has taken place particularly in the last few decades – with the removal of trade barriers to promote freer trade and more far-reaching integration of national economies – has brought enormous advantages. At the same time, the great disadvantages for other countries are obvious to us all. While in many countries globalization has led to higher life expectancy and better health, in others many millions of people have not had any share of the gains. The great beneficiaries of globalization are in the West, which has set most of the conditions for integration.

If humankind – we, our children and grandchildren – is to have a future fit for human beings, a future we can really look forward to, globalization, as it continues, must aim for completely new goals. It must become globalization with a human face, not, as now, globalization that serves the movements of international capital. Globalization must build on the basic principles and conventions that have been worked out by the United Nations in the sixty years of its existence. The firm foundation must be made up of respect for human rights, equality between women and men, the rights of children and the rights and freedoms of association.

The foremost goal of globalization must be to eradicate world poverty. This is the great challenge we now face. The first step must be forceful action to improve the conditions of life of the billions of people who live in extreme poverty, of the more than 1.2 billion people who live on less than a dollar a day and the more than 2.8 billion – over 45% of the world's population – who live on less than two dollars a day. This can be done if all the governments of the world take the pledges they made when they adopted the UN Millennium Development Goals seriously.

Here at last we have a common agenda for tackling many of the major challenges facing humanity. Everyone knows we can achieve these goals. It is merely a matter of creating the political will among governments and parliaments all over the world. One vital goal is for the rich

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countries to give 0.7 % of their GDP to support the poor countries. It is shameful that many rich countries have still not even reached a sixth of the target adopted and that the present average is less than a third of the target. But globalization must also build on fair conditions for trade.

The political will for this can only be created by educated public opinion. People able to imagine the conditions in which other human beings live; who can see the human faces behind all the statistics; who can feel the disappointment of parents who cannot afford to send their children to school; who cannot give their hungry children food or who cannot protect their children from malaria or other diseases. What can give us hope is that, fundamentally, we all have the same human nature. This means we are able to see a potential friend in every human being. But set against this there is the failing that Mother Teresa expressed in the words, "Nothing is as easy to tolerate as other people's suffering".

So we must create a feeling of global responsibility, from which a host of actions can grow that can meet all the threats that the human race itself has created. This is the point of (ESD).

However, this presupposes that all people are included in this education. Education for All must be a top priority for all governments. Basic education is a human right. Consequently, action to achieve the six Dakar Goals must be part of the groundwork. One thing this means is fulfilling the Dakar promise that no country that is able to show it has ambitious plans to provide education for all its people should have to refrain from doing so because of a lack of resources. Education is a human right. Therefore, school fees for basic education are unacceptable. We know that the world has the resources. Global military expenditure in a single year would have been enough to pay for all the primary and secondary schools Africa needs.

While Education for All is the foundation, in order to be effective and relevant it must also be inspired by the perspective of sustainable development. Education for All and ESD are two sides of the same coin.

ESD is at least as important in the rich part of the world as in the poor part. It is people in the rich part of the world who leave the biggest "ecological footprints", the most negative impact on the environment. They are the people who consume most non-renewable resources, most energy, and so on. It is those of us in the rich part of the world who have most reason to change our lifestyle, our patterns of consumption and production.

Education intended to support sustainable development must reflect all three dimensions of sustainable development – economic, social and environmental. This is why ESD includes so many types of education, the common factor being that the aim is for students to develop a will and an ability to feel responsibility for a sustainable future. It includes education for human

rights, education for environmental protection, education for gender equality, education for health, education for HIV/AIDS prevention, education for peace, education for international solidarity, and so on.

One thing that is particularly important in this ESD is active student participation, so as to foster a feeling of responsibility and a will to actively contribute to the development of a sustainable society after completing their education. This is completely in line with the UN Convention on the Rights of the Child.

The foundation for participation must be laid early, even in pre-school, and opportunities must be provided for it to grow by allowing children to take part in planning school activities, both in their own classes and in their own schools. Some upper secondary schools in Sweden have governing boards with considerable powers where pupils are in the majority. Student representatives also have considerable influence on Swedish university governing boards and use it very constructively in a way that is greatly appreciated by university leaders.

It goes without saying that teacher education programmes are of the utmost importance for spreading knowledge about ESD. Here, there are often good prospects of support for ESD. However, it is equally important to influence educational programmes for engineers, doctors, planners, social workers, journalists and other professions.

The 2005–2014 Decade of Education for Sustainable Development is the golden opportunity now offered to us all – committed teachers, school heads, students, education ministers and other education politicians all around the world – to take serious matters seriously, to work with others to change our education systems, so that when they have completed their education, students will really possess the ability and will to work actively for sustainable development in our societies.

The governments of the countries whose heads of state and government have endorsed the Johannesburg Action Plan and the UN resolution on the Decade of Education for Sustainable Development must now, at last, take their responsibility. Committed teachers and enthusiastic students are willing to shoulder their share of the responsibility, but this is not enough. Education ministers in all countries must feel that they are morally obliged to jointly seize the opportunity offered by the resolution on the UN Decade and to take the lead in efforts to change their countries' education systems.

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ESD must be informed by certain basic values and features. These are well set forth in UNESCO's Draft Implementation Scheme. This scheme has been an inspiration to the Swedish Government's Committee on ESD. In our report, we write that such education should be characterized by the following:

- Many multifaceted illustrations of economic, social and environmental conditions and processes should be dealt with in an integrated manner, using interdisciplinary working methods.
- Conflicting objectives between different needs and interests should be clarified.
- Democratic working methods should be used so that students can influence the design and content of educational programmes.
- Learning should be reality-based with close and frequent contact with nature and society.
- Learning should focus on problem solving and stimulate critical thinking and readiness to act.
- Both the process and the product of education are important.

A little more than six months ago, our Committee proposed to the Swedish Government that it take the following measures to strengthen ESD:

- Instructions to agencies in the field of education should be amended so that their activities promote ESD.
- Dialogue on ESD between stakeholders within as well as outside the field of education needs to be developed and deepened.
- Public research funders should be asked to provide further support to interdisciplinary research on ESD.
- Basic training and in-service training for those engaged in teaching activities in the field of education should aim to strengthen knowledge of sustainable development and how education can promote sustainable development.
- The Education Act will be amended to specify that education will promote socially, economically and environmentally sustainable development.
- The Higher Education Act will be amended to specify that activities will promote socially, economically and environmentally sustainable development.
- School curricula need to be reviewed to provide better support for ESD.
- Appendix 2 of the Higher Education Ordinance, the Degree Ordinance, should be reviewed with regard to making sustainable development knowledge a requirement for a degree certificate.
- UNESCO should be invited to establish an institute in Sweden to act as a node in an international network for ESD.
- A long-term strategy and action plan should be established for work on ESD over the next ten years.

- A pilot scheme should be established to provide opportunities for stakeholders in the school sector, the higher education sector and liberal adult education to produce methods to permeate the education system with a sustainable development perspective.

ESD must consist of two equally important processes. They are: a top-down process proceeding from a government that is conscious of its responsibility, together with its agencies, and a bottom-up process proceeding from all teachers, students and school heads, based on their own strong commitment to really contribute to a sustainable future.

But these two processes must be matched at other levels, for example, in towns and communities in our countries. A month ago in my hometown, Uppsala, the municipal council decided that in the coming years the education system would incorporate the sustainable development perspective. This decision will now be put into practice out in our schools. This will be made easier by the fact that Uppsala University and its teacher education programme have expressed strong support for working with ESD.

Similarly in many places in our country, a stronger and stronger interest is emerging in really taking ESD seriously. I think there is a good chance that these activities will develop into Regional Centers of Expertise along the lines proposed by the United Nations University.

However, it is not enough for the sustainable development perspective to be limited to formal education. It must pervade all education that is carried out in society, including personnel training at companies and in the public sector. I am convinced that the companies and public institutions that make sustainable development the guiding principle of their personnel training will very soon realize the great advantages to this approach. Their staff will feel proud to be involved in operations that aim to make a responsible contribution to the sustainable development of society.

Here, I believe trade union organizations can play a particularly important and proactive role. But it is not therefore merely a task for teachers' trade union organizations, which have declared through their international organization, Education International, that they want to work for sustainable development. It also concerns trade unions in other fields throughout the world.

It is my very definite hope that UNESCO will write to all the world's education ministers and remind them that it is their responsibility now to make a forceful start on changing their countries' education systems so that they support the fundamental principles of ESD much better and more clearly. I hope, moreover, that as soon as practically possible, UNESCO will also arrange special seminars on the importance of ESD aimed at education ministers and other leading education politicians.

We must create a feeling of global responsibility - this is the point of ESD.

When I started off on my journey from Uppsala to Nagoya the day before yesterday, after just a couple of kilometres I passed the place from which the Swedish scientist, botanist and doctor Carl Peter Thunberg set off on his journey to Japan 235 years ago. It took me a total of 19 hours to get here. It took him five years.

He arrived at Nagasaki on 13 August 1775, travelling on a Dutch vessel from Jakarta, disguised as a Dutchman. This was the only way he could enter Japan, which had then been closed to westerners for nearly 150 years. Along with two companions, he was allowed to visit the Shogun in Tokyo from 7 February to 4 March 1776. He became a good friend of two of the Shogun's personal physicians, Hoshu Katsuragawa and Junan Nakagawa.

These three men of science devoted their time together to exchanging knowledge, ideas and experience concerning botany, medicinal plants and healing disease, in a spirit of the greatest friendship and curiosity. For several years afterwards they kept in touch despite the enormous distance between them and the Japanese sent Carl Peter Thunberg the plants that enabled him to produce the first guide to the Japanese flora, "Flora Japonica".

Let us follow the example of these three scientists, who despite geographical distances and cultural differences created a lasting, deep friendship. Let us continue, in their spirit, to keep in touch and exchange experience about how we can help meet the great challenges now facing humanity, through ESD.

AKITO ARIMA

Former Minister of Education, Japan

Akito Arima is a former Minister of Education of Japan. He is now the Director of the Science Museum, and since 2000, the Chairman of the Japan Science Foundation. Professor Arima has been President of the University of Tokyo (1989-1993), President of the Institute of Physical and Chemical Research (RIKEN, 1993-1998), Chairman of the Central Council of Education (1995-1998), and member of the House of Councilors (1998-2004). He has received many notable awards, such as the Nishina Memorial Prize (1978), the Wetherill Medal from the Franklin Institute, U.S.A (1990), Das Grosse Verdienstkreuz of the Federal Republic of Germany (1990), Kanselarij der Netherlandse, Orden's Gravenhage, Amersterdam (1991), the Bonner Prize from the American Physical Society (1993), the Japan Academy Prize (1993), Officier de la Legion d'Honneur, France (1998), Knight Commander of the British Empire, UK (2002), and Grand Cordon of the Order of the Rising Sun (2004).

DEVELOPMENT AND EDUCATION: JAPAN'S CASE

At the dawn of Japan's Meiji Restoration in 1868, it faced the considerable task of creating a centralized state system out of a basically feudal system of government. In the ten years following, it busily attempted to bring about industrialization and economic development. One of the great reasons for its rapid success in this formidable undertaking was that prior to the Meiji period, Japan already had a high level of education which contributed to the quick implementation of compulsory basic education after 1868. This led to the development of a literate and numerate population which immensely contributed to Japan's industrial modernization.

The value of education lies not only in its importance for developing an improved quality of life for the individual, but also for creating citizens who can absorb and filter information, leading to a more conscientious society. Without question, the education of its citizens contributes to a country's economic development. Consider that basic education for girls up until the age of the ten, alone, is proven to achieve a healthy drop in birthrates, represented by a rise in the age of first time mothers and changing relations among partners. In Japan, the Meiji period's regularization of basic education obviously had great meaning for economic development. It was not just thanks to the Meiji policy that such progress was possible. Japanese society, from the Edo period onward, recognized literacy and numeracy as basic matters of educational import. In fact, in most cities towns and villages, the "terakoya" or temple-centered school existed as a source of basic education for all children. With such practices in place, it was comparatively simple for Japan to modernize its education system within a short period of time. In the latter half of the 19th century in Japan, boys' literacy rates were at 70% and that of girls at 25%, which even by today's world standards is high. The important thing about regularizing basic education in Japan was not the central government's move to make it compulsory so much as it was the desire and belief on the part of the citizens that a focus on education was important to creating a society with good individual and civic values.

Asia has rich physical resources and its subregions share many common physical and value-related characteristics. At the center of Asian traditional culture is a respect for nature, which translates to a healthy awareness of nature's productive and destructive powers. It is visible in the animistic beliefs which have been an integral part of our civilization's development. It is evident that from at least as far back as the urbanization of Tokyo (then Edo) and Kyoto in the 17th century that urban waste was being managed centrally and that certain forested regions, for example, were explicitly protected from pollution. Such practices were not unique to Japan, but also practiced, for example, in China.

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Now, most every part of Asia is or has experienced industrial growth, technological development, urbanization and agricultural modernization. At the same time, the environmental effects of this rapid economic and social development are being felt. From the 1960s to the mid 1970s, during Japan's most rapid period of economic growth, the air, land and water of our country became a danger to the health of our people. I hope that all will learn from Japan's mistakes and experiences at this time, recognizing that during such periods of growth, the potential effects on the environment must absolutely not be ignored. Of particular importance is the need to appreciate the use of natural and energy resources, being conscious not only of the amount of energy we use, but how we produce it and how we can better protect the atmosphere.

Education for Sustainable Development (ESD) is key to this consciousness. I believe there are three basic pillars of sustainable development: economic development, social development and environmental protection. The best means to address and change the ways of thinking of people in developing countries is through education. People in developing countries, too, must be encouraged to change their lifestyles in a manner that takes account of the effects which their way of living has upon their environment. Sustainable development requires us to address a host of areas ranging from poverty reduction to sustainable industry, to gender and basic education and to the protection of our air, water, forest and land resources. This requires cooperation around education at both the national and regional levels to develop appropriate content and methodology. UNESCO, as the lead UN agency in the quest for ESD, is paving the way in promoting fundamental quality education and its methodology. It should focus on assuring that ownership is centered in the regions, facilitating strong networks and clear information, all the while emphasizing the importance of a scientific outlook as we continue to address the issue of sustainable development. Finally, for ESD to succeed, it must cooperate with other United Nations initiatives, including the UNESCO-led Education for All initiative and those of the United Nations Department of Economic and Social Affairs, the United Nations Environmental Programme, and the United Nations Development Programme, to name a few, whose work is closely tied to the success of this important movement of ESD.

Respect for nature is at the heart of traditional Asian cultures.

MAMORU MOHRI

Astronaut and Executive Director/CEO,
National Museum of Emerging Science and Innovation, Japan

Mamoru Mohri, astronaut and Executive Director of the National Museum of Emerging Science and Innovation, Japan, holds a Doctorate in Chemistry from Flinders University of South Australia. In 1982, he became Associate Professor at Hokkaido University, and in 1985 was selected as a National Space Development Agency (NASDA-now Japan Aerospace Exploration (JAXA) astronaut. In 1992, he became Japan's first astronaut, flying on the Space Shuttle Endeavour as a Payload Specialist, where he conducted 43 microgravity experiments, and created Japan's first "Classroom in Space". In 2000, he flew again on the Space Shuttle Endeavour as a NASA Mission Specialist and contributed to obtaining a three dimensional map of the earth. In 2000, he was appointed as the first director of the National Museum of Emerging Science and Innovation that introduces the latest developments in science and technology.

WHAT IS EDUCATION: THE VIEW FROM SPACE

The topics of relevance to Education for Sustainable Development cover a broad area. I believe we first must address the question, "What is education?" Some say education is the conscious, social development of infants, so that they may learn to survive. We find that this is true for all life forms, including humans.

We must also ask, "What is learning?" Learning could be the assimilation of information that can then be applied. Likewise, this is not limited to only the human species; it extends to all life on our planet. There seems to be some sort of a learning or educational link between life forms. Recognizing that common thread is of utmost importance.

Yet, we human beings are a notoriously self-centered species; in fact, some would call us obsessively egocentric. When we do take a step back to see things more objectively, however, we begin to discover a new perspective. We begin to identify a network of life that began over four billion years ago. We begin to begin to grasp the development of our planet, where one indication of that development is the appearance of highly intelligent forms. We humans are among that group. My perspectives changed when I first flew on the space shuttle, so let me take you on a journey of discovery.

When we are able to actually see a community from 30 kilometers above the earth, we begin to understand that the individual is but a tiny part of it. Pulling back to 100 kilometers, we can see a greater area but fewer details of the human condition. When we have an even wider view, from about 300 kilometers (the orbit of a shuttle or space station), we begin to lose sight of the community. If we pull back to 30,000 kilometers, we see a blue orb in the utter, vast blackness of space. From the moon itself, we see the earth as an even smaller floating ball. Further still, and our planet becomes a dot and soon disappears altogether. So much for humans being all-important!

Now let us reverse this process, but this time let us focus on Mars. If you look closely, you begin to notice the similarities between the Red Planet and Earth. Mars has both frigid north and south poles, below which many believe lies frozen water; Mars has clouds as does Earth, and Mars has an atmosphere. Two robot probes are now on Mars, where they searched for and found evidence of ancient oceans. Again, this is much like Earth. Oceans usually mean life, and we may be startled to learn any day now that there was, and indeed may still be life on this planet. In fact, Mars and Earth started out pretty much in the same way. So what happened? Why did Earth develop such an abundance of life and Mars fail to flourish?

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Let us fly back to Earth for a closer look. From far out in space, the earth looks like an entity in and of itself, alive with swirling blue, green, and brown clouds. As we approach, we see that ocean covers 75% of the planet. Landmass covers the remaining 25%. The first signs of life we can see are not human beings, but the forests. As we fly closer still, we begin to see life in the oceans - beautiful turquoise-blue rings of coral around small landmasses - but still no humans. We humans believe we are the most important and noticeable life form on our planet, but this would not seem the case to a space traveler passing over the day-lit portion of Earth.

It's a different story when the sun goes down and night falls. The forests and coral, so noticeable during the day, are now undetectable. Instead, we can see large and small clusters of lights, all linked with what appear to be threads of light. This is true of all continents at night. Human presence is in bright evidence.

Because of developments in science and technology, we are able to have this outside, macro-perspective of the view from a spacecraft. If we continue our journey, closer and closer, science and technology will allow us to acquire yet another perspective, this time at the micro- and nano- or atomic level. What do we discover? We are amazed to find that of the 30 million species of life on Earth, each one is connected to all other life forms through a common, though for each species slightly different DNA. This has been true for four billion years. Life started out in simple forms, then developed and evolved into different species, including humans. You and I are here, living now, because our many species of ancestors survived and connected over the course of those four billion years.

All the life forms on this planet, whatever they might be, appear to be connected. We are living in a new age in which science and technology allow us to view, objectively, from this wide range and from these different scales, the uniqueness of life forms and how they have survived. Understanding survival is imperative.

We now know that a human, if lucky, is able to survive for just about 100 years. However, cultures built by humans can survive for much longer. American culture is about 300 years old, Japanese culture is about 2,000 years old and Chinese culture is over 4,000 years old. If looked at as a species, humans have survived over several million years, and life on our planet has thrived for over four billion years. But what is it that assures the continuation of one species and not another, of one culture and not another? There are four elements: diversity, challenge, prosperity, and sustainability.

Sustaining does not mean simply maintaining the status quo. In fact, due to the myriad of ever-changing environmental factors in which species live, there is no status quo. Therefore, a species with the ability to diversify survives in a continually diversifying environment. For example,

within an environment, there could be a temperature change, and those species that can change with it – showing a novel ability to adapt – survive. Each individual member differs slightly from the others and as such presents a slightly different approach to solving the problem of change. The successful individual can lead the way for other members. So, bringing something new to the mix is critical for survival.

We come now to the second step, challenge. Challenging the known, the usual, is crucial for the progress of a species. For example, we know that life formed in the seas and that there was an explosion of life forms to the extent that some species were forced to search for a new way to survive. Those species then challenged their known environment and moved to land. Another explosion of life followed. Life changed, diversified and met the challenges of the land environment. Once again, out of the need to survive, some species took to the trees. Some of those tree dwellers then challenged the land-locked and tree-locked environment and ventured into the air. Each step required challenging the unknown with individual diversity.

We see this challenging spirit in humans with artists, musicians, scientists, researchers, scholars, athletes, writers, or anyone with notable success. All share the common trait of challenging the status quo by being unique and different in their approach. Therefore, diversity and challenge go hand-in-hand, resulting in prosperity. Species prosper when overcoming threats to their survival, and when prospering, out-of-the-ordinary feats are accomplished. Prosperity leads then to sustainability. Sustainability means that the prior processes required (diversification, challenging) have taken place. The entity then becomes dynamic, able to adapt, to confront the unusual, to thrive and to expand its universe.

What path can humans follow in order to achieve prosperity and sustainability? Most people believe they need only adjust and adapt to local society. This represents a basic type of diversity, whose needs are addressed through basic education covering reading, writing, math, and a rudimentary understanding of science and social behavior. However, advanced education, starting at the high school level and continuing onward, develops each person's unique, innate abilities in order to spur progress towards a sustainable society. Those abilities take dedicated time and effort on the part of each person, and advanced education should assist the individual in discovering, nurturing, and developing the qualities that makes the individual unique.

The durability of our society should always be in question. We are familiar with the rise and fall of a host of societies from the beginning of recorded human history. A society must be able to adapt and diversify, to challenge known ways of creating livelihoods that encourage and sustain a flourishing society. There is a tendency, however, for successful societies to want to maintain their successful models, which in fact marks the beginning of the end. Maintaining the status quo may result in the stagnation and eventual ruin of a society, marked by the eventual rise of another.

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This is the historical path that traces the very survival and sustainability of our species. Thus, we must turn to higher education to assure the sustainability the individual, the culture and society, and the species. This applies to all endeavors we wish to undertake, be they in business, science, the arts, education, or simply trying to live a better life. This is the wisdom of life forms. No one species is indispensable, yet each is important. The more diverse life forms there are, the more we can learn from them. Plus, the opportunities to challenge what is known increases, and life prospers and is sustained. Therefore, no one member, be it an individual, species, or planet, is indispensable. However, each can play an important role and can contribute to prosperity and sustainability, i.e., to progress.

I offer you this perspective, that each of us is different and unique. If we apply our unique talents and remain open to learning from others, we find ourselves becoming more flexible, more adaptable, and more able to diversify. If we force ourselves to challenge the known and venture into the unknown, then we may prosper, and have an impact far beyond what we can imagine. We can all make a difference.

Sustaining does not mean simply
maintaining the status quo.

III. INITIATIVES ON EDUCATION FOR SUSTAINABLE DEVELOPMENT

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SHIGERU SUMITANI, Vice Minister for Administration, Ministry of the Environment, Japan
PUTTING POLICY INTO PRACTICE THROUGH ESD

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We must look not only to environmental education, but also to education focused on development and social welfare, on diverse cultures and histories, and on peace and human rights education.

PUTTING POLICY INTO PRACTICE THROUGH ESD

In February 2005, the Kyoto Protocol went into effect, and on 28 April of that same year, Japan adopted its target achievement plan, a major step towards reducing its greenhouse gas emissions by 6%. Furthermore, at the end of April, Prime Minister Koizumi announced a “3-R Initiative” to “Reduce, Reuse and Recycle”. Overall, this represents significant progress for Japan’s environmental policy. In order to bring this policy into practice, each and every one of us must become the owner of our environmental problems, tackling practical issues, beginning with a review of our lifestyles and conventional economic activities. Therefore, it is of extreme importance that we promote Education for Sustainable Development (ESD) towards this end.

In September 2004, the government undertook the adoption of a new law for environmental protection activities and environmental education. This allowed the Ministry of the Environment and other ministries to strengthen their efforts to promote a Decade of Education for Sustainable Development. For these purposes, our government contributed to United Nations University and its Institute for Advanced Studies, helping specifically to sponsor workshops focused on the importance of developing knowledge about ESD. It helped education for sustainability in the region progress by sponsoring reformed mechanisms to promote the building of regional community centers. In addition, the role of universities and secondary education in ESD was strengthened through leadership training activities.

In order to build a sustainable society, we must look not only to environmental education, but also to education focused on development and social welfare, on diverse cultures and histories, and on peace and human rights education. The contributions of the Johannesburg Summit, non-profit organizations and the private sector must also be recognized and incorporated. Certainly in Japan, environmental policy needs to be in close touch with the private sector and its related organizations in order to see that this Decade for Education for Sustainable Development succeeds. It is my great hope that this meeting and the Asia Pacific Regional Launch of the Decade will further our progress towards a sustainable future.

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MAINSTREAMING PEACE-BUILDING EDUCATION FOR A SUSTAINABLE WORLD

The 21st century has witnessed drastic changes in the international order. Since the September 11th terrorist attacks, the world order has been shaped by open-ended struggles against any number of elements defined as “terrorist”. Worldwide, a large number of on-going conflicts and wars are currently taking place at both the intra- and inter-state levels. Therefore, both preventive diplomacy and efforts to reconstruct post-conflict societies will remain fields of great importance.

Within this context, one cannot overemphasize the importance of education in promoting and maintaining sustainable development. We can construct schools, bridges, hospitals, and other socio-economic infrastructures with relative ease both in peace-time and post-conflict societies, provided financial capital and technological capabilities are available. However, human capital takes much more time to develop. One of the most fundamental aspects of building this human capital is, of course, education. In this paper, I would like to propose the “mainstreaming of peace-building education” as an essential component of sustainable development.

What, precisely, does “peace-building education” mean? How different is it from “peace education”? Peace-building education attempts to build peace in peace-time and post-conflict societies through education. As it emphasizes the act of “building” peace, it focuses on the process over the specific goal of peace. This is because the concept of “peace” is a very difficult one to define. Peace is not only an absolute, but often a relative state of being. Peace is not necessarily a static condition, but refers to the process of applying human efforts towards constructing a situation of reduced conflict. Thus, peace-building should be an ongoing, dynamic process which involves all members of society. It should focus on teaching and learning how to build more peaceful communities and states that will ultimately contribute to a more peaceful world.

In post-conflict societies, the tragedy of war and conflict remains vivid. Scores have died and communities are physically and socially destroyed. Often, the socio-economic infrastructures required to meet basic human needs are devastated. Survivors suffer from the physical and psychological traumas of their conflict experiences.

Yet, when I look for any bright aspect of war-torn societies, I find that there is always potential in the next generation; the young people in post-conflict societies will be the ones to reconstruct their own societies. In this regard, peace-building education in post-conflict situations plays a key role in contributing to the sustainable development of these societies.

Peace-building education refers to education in both formal and informal terms. When the international community provides assistance to a post-conflict society, that assistance comes in various stages, ranging from emergency aid, to rehabilitation and reconstruction, to development aid. In every phase of assistance, a peace-building orientation should be present. For example, in delivering water and food as emergency aid, aid practitioners should encourage people not to struggle against each other for the goods, but guide them to wait in line without fighting each other.

As most peace-building activities should involve the participation of local people, peace-building education should have a participatory approach. Here, the role of NGOs is vital, as the formation of government institutions often takes a considerable amount of time. More easily-constructed social networks should therefore be utilized to enhance NGO activities which can bridge the gap.

Peace-building education attempts to build peace in peace-time and post-conflict societies through education.

“Education for All” is a most significant undertaking which UNESCO, along with other UN organizations has been actively promoting for over a decade. Yet, it is inevitable that assistance in the field of education encounters political sensitivities within the recipient countries. Questions of “who” provides education and “how” often become political issues in post-conflict societies where no formal government is yet in place to implement a national framework for education. External actors, such as donor countries and international NGOs may therefore exert political influence through the educational assistance they provide. For example, in post-Taliban Afghanistan, the transitional government was careful of accepting elementary textbooks from Iran, as Iran’s textbooks maintain Shi’i Islamic values which, from the perspective of Afghan transitional government, clashed with Afghanistan’s efforts to secularize state education.

On the other hand, roughly 2.5 million Afghan refugees and migrants have arrived in Iran over the last 25 years, among whom are many school-age children. To what extent the Iranian government should provide for Afghan refugee children has become a political issue in Iran because of Iran’s growing shortage of schools due to the rapid of increase in the number of school children. Thus, locally established Afghan NGOs have played an important role in providing basic education for Afghan refugee and migrant children. This example demonstrates the importance of NGO assistance for refugees and migrants in host-countries.

In the case of educational assistance to post-conflict societies, the right choice of subject-matter is essential to any attempt to promote peace-building education. Important subjects include gender equality, environmental consciousness, balance and equity among all members of society. Education in these subjects can help to eliminate political, economic, social and cultural discrimination, which are substantial factors in the outbreak of conflict or war. In sum, peace-building education in post-conflict societies should have a ground-upwards orientation as illustrated by the NGOs, and should help to resolve some of the structural problems of conflicts by minimizing discriminatory values and practices in political, economic and social relationships.

The aforementioned steps of peace-building education require a long term commitment. In particular, the second aspect of peace-building education is a crucial one, most effectively carried out over a significant period of time. This suggests that peace-building education in post-conflict societies may not differ significantly from peace-building education in peace-time societies insofar as it requires a long-term and even life-long commitment on the part of both facilitators and recipients. The next section of this paper discusses the necessity of mainstreaming peace-building education in peace-time societies, in a manner similarly applicable to post-conflict societies.

Mainstreaming peace-building education means implementing it at all levels and through all subjects. In traditional Japanese education, global issues such as population problems, conflicts and wars, the proliferation of weapons of mass destruction, environmental protection, international money laundering, and so forth, are covered in social studies textbooks. However, in rapidly-globalizing societies in particular, one should consider these problems as one of the outcomes of technological and social development. It goes without saying that technological advancement is a double-edged sword which can be utilized for destructive purposes. Thus, a certain degree of synthesis of the humanities, social sciences, and natural sciences is necessary in both teaching and learning. Ideally, belief in human commitment to building a more peaceful world encourages synthesis within the sciences. Here, one should identify the significance of peace-building education for both peace-time and post-conflict societies.

For example, when basic algebra is taught in elementary education, one should teach how to divide a limited amount of food among all members of a community. Another suggestion is that students should learn more about the impact of population growth not only in geography classes but also in science classes. When it comes to higher education, concrete events and real world phenomenon should be studied. For example, economics courses should explore how economic development can have devastating impacts on the environment. At law school, students should learn about anarchy, and which societies are prone to conflict and war in terms of their institutions and the way they function. At medical school, students should learn about demographic trends of HIV infection and its wider social impact. Engineering students should learn about the disposal of industrial waste and its environmental effects.

In other words, attempts should be made to convey the realities of our political, economic, social, and scientific interdependence by teaching about global issues within every academic discipline. By doing so, students will be able to locate each discipline within the context of each individual's direct and indirect responsibility for the course world events, and how their own actions may influence others.

Educational content and methods have long been considered the sovereign realm of individual states. This is obvious from the fact that textbooks and curriculum are often in the hands of each state's ministry of education. On the other hand, it is also true that universal human values extend beyond national borders. Regardless of the circumstances, taking human life is unacceptable. Stealing from others is forbidden. Such values should be incorporated in all attempts to implement peace-building education, wherever it is taught and in whatever context.

As mentioned earlier, peace-building education is not limited to formal education. Such understanding should also be attempted through informal education. The Nagoya Environmental University is noteworthy. It was established through an initiative of Nagoya City, Aichi Prefecture, Japan, in 2004. The goal has three pillars of implementation. The first pillar is sharing knowledge and experience about the theory and practice of environmental protection among residents of Nagoya City. The second pillar is promoting and realizing partnership among citizens, companies, universities, and local governments. The third pillar is that those who want to learn about physical and social environmental issues, regardless of age or gender, can learn at any time, at any campus in Nagoya City.

Though the university has "Environment" in its title, the Nagoya Environment University teaches a wide range of subjects. One can learn not only about environmental issues but also the history of science, corporate social responsibility, gender equality, international politics and economics, United Nations peacekeeping operations, and many other subjects. This type of education has been made possible through strengthened regional partnerships among universities, schools, and companies spurred by a local government initiative. The growth of networking among these stakeholders has been a crucial to its success, and should continue.

There is no turning back from the very real phenomenon of globalization visible not only in terms of the economy, but also in terms of the mobility of information, goods and people. The on-going processes of globalization generate positive and negative effects. One can not deny that most conflicts and wars are caused by harsh competition to secure natural resources, particularly energy resources.

The more uncertain the future, the more necessary it is to create a solid foundation of common values by which all human beings can abide in harmony. Ultimately, we must all share a consciousness as global citizens. It is my hope and belief that by mainstreaming peace-building education for a sustainable world, as envisaged here, we will pave the way to raise people's consciousness of their global citizenship in a manner that extends across generations, gender, and borders.

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PACIFIC ISLAND COUNTRIES AND INITIATIVES FOR ESD

Kofi Annan stated that the biggest challenge in this century will be to take an abstract-sounding idea – sustainable development – and turn it into reality for all the world’s people. Many would argue that this is essentially an educational enterprise. Building capacity for making decisions that consider the long-term future of economy, ecology and equity is a key task of education. Education for Sustainable Development (ESD) may be described as a continuous process that enables human beings to develop knowledge, skills, perspectives and values to motivate and empower people to work toward attaining such balance.

Traditionally, Pacific island people have lived a subsistence lifestyle with taboos and practices that ensured sustainability of resource use. However, modernization has reduced the quality of life, affecting the very pillars of sustainable development. The ever-globalizing situation of small island states in the Pacific continues to be one of exposure and growing vulnerability with an increasing inability to respond. These states face many disadvantages which derive from their small size, a narrow range of resources, excessive dependence on international trade, high population density, overuse of natural resources, relatively small watersheds, costly infrastructure, fragile ecosystems and high levels of endemism.

The region and its individual Pacific island nations have made a strong commitment to international efforts to prevent further irreversible environmental change and to promote sustainable development by becoming party to numerous multi-lateral environmental agreements. They were key players in the negotiations at Rio, Johannesburg, Barbados and Mauritius.

At their special retreat in Auckland on 6 April 2004, Pacific island leaders adopted their new vision for the Pacific, which seeks to give all Pacific peoples lives that are “free and worthwhile”. In addition, economic growth, socio-cultural and environmental protection, good governance and security were also recognized as key priorities for bringing about sustainable development.

Within the Pacific context, the major concerns in the area of economic development include negative or low growth and resource depletion. In social development, there are serious concerns over rising poverty, declining health and education standards and facilities, and other equity issues. There are also major environmental issues relating to pollution, waste management, loss of biodiversity, and natural disasters. In governance and security, the major challenges are located around institutional deficiencies, poor resource management, political instability, breakdown of law and order, inequalities, trans-national crime and other human security concerns.

III. INITIATIVES ON EDUCATION FOR SUSTAINABLE DEVELOPMENT

The challenge now is to mainstream sustainable development at a time of decreasing official development assistance to small island developing states (SIDS), declining foreign direct investment flows, diversion of development resources to meet new security obligations, graduation of SIDS from concessionary resources, and establishment of new trade rules - all serving to further exacerbate SIDS growing vulnerabilities. But as we heard in Johannesburg and again at Mauritius during the international meeting of SIDS, it is all about making it happen by considering measures equal to the task.

Access to education is widespread in most South Pacific Forum Island Countries (FICs). All countries have made significant progress in recent years towards the provision of universal access to basic education. FICs spend large proportions of their budgets on education, which indicates their commitment to it. There is increasing pressure for access to higher levels of education, which places demands on countries to provide costly tertiary education, sometimes at the expense of basic education.

An inter-regional SIDS capacity-building workshop held at the University of the South Pacific in December 2003 revealed that the educational systems in various SIDS require serious reorientation to connect the requirements for sustainable development in the communities to the training that will be provided to the students so that they can return to their communities with new and relevant skills.

The region is well aware of the fact that in order to enable sustainable development, a holistic education embracing modern disciplinary rigor and the usefulness of indigenous knowledge systems will be required and these must be administered within the special cultural settings of the learner.

By and large, the Pacific educational system is sensitive to the protection of local ecosystems. Varying degrees of emphasis on environmental education may be found in the region. For example, Papua New Guinea has a primary schools environmental education curriculum and Kiribati has an environmental science for primary schools curriculum.

Because of the enormous scope of ESD and the complexity of our region in terms of distance and distribution of islands, a range of stakeholders must be involved and a variety of modes of delivery used. To provide the capacity needed to achieve sustainable development, major changes are needed in the educational system. Primary targets should be at the teacher training programme level and the tertiary education curriculum development level.

In terms of regional versus national approaches to development, the questions of what is most appropriately dealt with regionally and what is best delivered nationally are longstanding.

This is critical to the question of how effective regional cooperation and technical assistance will be in the future. In recent years, the regional approach has been boosted by an increasing recognition that economic growth and sustainable development are not moving forward as hoped at the national level and that there may be significant economies of scale through regional action.

Because of the small size, scattered nature and the general lack of capacity at all levels, the Pacific islands have long recognized that certain generic issues such as regional governance, trade, security, education, health, tourism, natural resource management and environmental protection can be better and more strategically coordinated at the regional level. This approach has led to the establishment of about a dozen regional institutions with a general mandate to provide technical support to the Pacific islands in their efforts to achieve sustainable development.

All regional efforts are, of course, aimed at building capacity at the national level. The curriculum development units of almost all Pacific island countries are involved in periodic revisions of their overall educational programs to accommodate new and evolving issues. What is probably missing is a holistic approach, across the board, which blends ESD thinking into the curricula.

Research in science and technology can do a great deal for sustainable development by contributing to the fight against disease, population growth and urbanization, to lessening the digital/information divide, coping with climate change, confronting the water crisis, protecting the soil, preserving forests, fisheries and biodiversity, promoting indigenous knowledge and building a new ethic of global stewardship.

Finally, access to information and human resources development will give a competitive edge to countries that lagged behind in industrialization during the 20th century. These factors will help to overcome poverty and to achieve economic growth. Both equity and equality of opportunity are essential to improving the intellectual capital which, when mobilized, should enable the generation of the material and spiritual wealth so needed in the future.

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LIFE-LONG LEARNING AND ESD

The mutually connected concepts of sustainable development and corporate social responsibility have been put on the agenda by the continuing process of globalization. In both approaches, a central dilemma is finding a responsible balance between increasing productivity in the context of economic development on the one hand and individual welfare and the carrying capacity of "System Earth" on the other. Concern about the carrying capacity of "System Earth" is an intrinsic part of sustainable development and corporate social responsibility because human activities are completely dependent on the natural and biological resources of that system.

People and organizations are realizing the importance of learning for sustainable development, making it all the more important for us to address the question of what learning is. Learning may be described as the result of interaction between an individual or an organization and its physical and social environment. Described in this way, learning is a process that takes place in formal, non-formal and informal environments and continues throughout life. Formal learning occurs within the educational system, while non-formal learning refers to on the job training. Informal learning which occurs in all other learning environments includes those provided by social interaction, museums and the mass media, for example.

On average, only about 5 – 10% of a person's life-long learning process takes place in the formal learning environment. For life-long learning, informal and non-formal learning and interactions are much more important. Learning for sustainable development could therefore be described as a search for an effective context that embeds learning in the quest to realize a sustainable balance between the capacity of "System Earth's" economic development and the individual well being of people in their own environment.

During the learning process, new options are tried out and choices are continuously made. Two of the most important factors in the process are the learner and the learning environment. For the learner, the learning process contributes to the formation of social identity in which the individual can recognize him or herself as a valuable individual with respect to others. The format of the learning environment depends on age, prior knowledge and social activity. It will therefore change throughout the lifelong learning process.

As the organization of education reflects the historical development of the society in which it was developed, objectives of learning processes in the present educational system are often classified by discipline, reflecting the 19th century concept of knowledge. An analysis of these objectives gives insight in the optimal conditions for realizing learning objectives. This approach can be effective in domains characterized by independent learning objectives, but is

less satisfying in situations characterized by more integrated and complex sets of learning objectives. The didactic design of learning environments which find their starting points in a specific discipline generally implies that the learning process takes place within in a relatively closed system. This means that the formal learning process takes place in a learning environment that is relatively shielded from society and that the application of knowledge in vocational or societal practice only occurs after the formal learning process has finished. One may wonder if this way of teaching is still in harmony with society, in which continuous change seems to be the most stable factor. The content of most professions is changing and people are required to integrate ICT instruments into their professional lives. Furthermore people should be able to reflect critically on information, to develop social competencies, and be able to work in multi-disciplinary teams. In light of this characterization of our society, we may ask ourselves if our educational systems still optimally support the learning processes of individuals who must become the world citizens of the future.

It is tempting to state that in our present society, individual learning environments should become more dynamic and individualized on the one hand and introduce the aspects of economic globalization and its consequences on the other. Creating authentic learning environments in which learners become both rationally and emotionally engaged and in which learners are challenged to create by interacting with others can be seen as a challenge. In a globalizing world in which virtual social space becomes an increasingly evident complement to physical space and civil society, ICT instruments have great potential which must be explored.

The Open University of the Netherlands and Zuyd University for Applied Science, both located in Heerlen, the Netherlands, took the initiative to start working on a Regional Center of Expertise (RCE) in the context of the United Nations Decade Education for Sustainable Development in the European region around Eindhoven (Netherlands), Cologne (Germany), and Leuven (Belgium). Presently, higher education institutes from Germany and Belgium and a number of societal stakeholders from the area are joining the initiative. According to the UNESCO Higher Education Information Brief, a (RCE) works with all age groups within the formal educational system to create links between the formal educational system and a broad range of stakeholders in society. This is precisely what is beginning to happen in the Eindhoven-Cologne-Leuven RCE. At the same time, this emerging network is co-operating with similar initiatives in other European regions. Within Europe, learning for sustainable development in urbanized areas is used as an umbrella theme. Furthermore, the regional and European networks want to become part of a much larger global network of RCEs that will hopefully constitute a global learning space for sustainable development towards the end of the United Nations Decade for Education for Sustainable Development.

Realizing a more sustainable development trajectory in our globalizing world is a challenging, but highly necessary endeavour. An RCE for “Learning for Sustainable Development” in the Eindhoven-Cologne-Leuven region would aim to work, together with other partners for that global objective, using its local resources in a creative, effective and efficient way.

Creating learning environments that facilitate learning for sustainable development requires reflection on the characteristics of the world we are living in, on the meaning of the concept of sustainable development and on the way we have organized learning processes in our societies. We think that learning for sustainable development should be part of a life-long process taking place in formal, non-formal and informal learning environments. Therefore, we feel that collaboration with other parties motivated to work together to build a global learning space for sustainable development in the context of the United Nations Decade for Education for Sustainable Development will be most rewarding.

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UNIVERSITY-BASED INITIATIVES FOR ESD

Education for Sustainable Development (ESD) is an abstract and conceptual principle that is in dire need of examples of practices that transform conceptual values into real contributions towards sustainable development. This paper explains how an institution of higher learning adapts and translates the concept of sustainable development not only on its campus, but extends beyond the university to the surrounding community.

The practice of sustainable development began mainly with the states. Malaysia for example, clearly outlined its commitment to sustainable development in its long term planning through its National Development Policy (OPP 2001 – 2010), by becoming a signatory to the Kyoto Protocol in 1999, and more recently through the Prime Minister's February 2005 attendance of the Paris Biodiversity Conference. Over the years, however, its effectiveness has fluctuated with the efficiency of the state machineries, and with political and economic factors. As a result, Malaysia's ecological foot print is 2.99 global hectares per capita (ghpp) as compared to the world average of 2.18 ghpp. The world's biocapacity is at 1.89 ghpp.¹

This shows that Malaysia and its citizens are still living beyond their means. Living within our means requires that we live within the regenerative and absorptive capacity of the planet, which is what sustainability is all about. Kofi Annan has addressed the role of educators, posing the question of how educators can help to develop an understanding of "one world" and our roles as global citizens. Within this context, we have explored the various avenues available for the Universiti Sains Malaysia (USM) to embark on promoting Education for Sustainable Development (ESD) and to act as a Regional Center of Expertise (RCE) for the region of Penang.

The question of sustainability and sustainable development remains an abstract issue for many. Embarking on efforts of sustainable development by pursuing the idea that development should stop in order to preserve nature will prove a challenge that few are willing accept. We have proposed that practices and programmes at the local, regional and global levels be used towards education for sustainable development. For USM, this would mean using an onion model, consisting of four programme layers, listed from the outside, moving inwards. They are the Healthy Campus Programme, University in a Garden, the Transdisciplinary Cluster Approach and the USM-Community Partnership.

The model envisages local action through the USM Healthy Campus Programme. This programme was initiated in 2001 and was successful in creating and promoting a caring environment through the concept of volunteerism, transdisciplinary teams, research and development

¹ Living Planet Report 2004 (<http://assets.panda.org/downloads/lpr2004.pdf>)

III. INITIATIVES ON EDUCATION FOR SUSTAINABLE DEVELOPMENT

based activities, data-driven programmes, in-sourcing of expertise and complete and thorough documentation involving campus citizens. The Healthy Campus activities range from health-related to environmental and socio-economic oriented activities. More than 15 projects have so far been undertaken. These include anti-obesity and anti-tobacco clinics, the Taiping Peace Initiative, recycling and a programme specifically aimed at “differently-abled” students.

The second programme is the University in a Garden (UiG). The UiG is both a concept and governing rule that epitomizes the basic foundation of life and being - that of the intrinsic relationships between man, his creator and nature. It intends to celebrate the rich biodiversity of the garden campus and at the same time promotes interdependence and outside the box thinking. The UiG’s philosophy is to sensitize the campus on the basis of existing and available resources and assets which should be preserved and optimized. In this instance, USM is determined to protect its green spaces by declaring a moratorium on new buildings, while attempting to return to nature as much as possible.

The third local action (referring to action on campus) is the transdisciplinary cluster approach. USM believes in the transdisciplinary cluster as adopted in its research and development philosophy that promotes transdisciplinary practices through the formation of research clusters. Through this clustering, USM strives for a balance between promoting science and technology and the arts and humanities. Researchers are encouraged to work in clusters through the formation of six main research cluster platforms managed by the deans of research.

At the regional action level, USM has implemented a USM-Community Partnership programme. Recent successful examples include the Malaysian Citizenship Initiative (MCI), a USM-led nationwide civic and active citizen learning programme. The main participants are high school students led by their teachers. They work as a team and are empowered to select a community-based problem. The problem identified is thoroughly researched and a critical assessment is made. The team then suggests creative solutions, which are evaluated by stakeholders, who are also involved in the problem solving process. Another example is the Taiping Peace Garden project, undertaken together with Taiping Municipal Council and supported by the United Nations Development Program. This programme is aimed at portraying the town of Taiping as a center of peace and racial harmony in Malaysia, as Taiping had a history of communal problems which were resolved through community based initiatives. The programme is seen as an extension of the Healthy Campus Programme, which reaches into and transforms the local community.

Along the lines of working with the community, USM believes that through transformative education in ESD, the experiences and practices of higher education institutions can be infused to the community through vertical and horizontal ties. In this respect, several entities have been identified, including institutions of higher education and colleges, the Penang Botanical Gardens, Penang National Park, the Malaysian Fisheries Research Institute and the Batu Maung Fish Center.

In working with the community, USM strongly recognizes the significant role of the state of Penang. University-community activities are always inspired by various state projects and programmes for sustainable development. For example, the Penang recycling programme started its recycling campaign in 2002 and the recycling rate increased from 1.5% (2002) to 15% (2004) allowing 70,000 tons of waste to be recycled. This brought about savings of RM8.5 million (US\$ 2.4 million) in waste management costs. Another notable initiative was the Sustainable Penang Initiative, which was launched in 1997 and needs to be revived. USM was one of the players in the initiative. Among the issues discussed were ecological sustainability, social justice, economic productivity, cultural vibrancy and popular participation.

USM believes that several lessons can be learned from its effort to promote ESD and from its experience of initiating an RCE. They include: recognition that there must be a shift in mindset in order to revolutionize education; that we must change the way we teach and learn; that we must push changes in education policies, structures and curricula. Additionally, we recognize that research and development is vital to the improvement of knowledge about sustainable development. We must showcase a sustainable campus and there must be close vertical and horizontal ties among government, NGOs and international organizations.

ESD is all about learning - learning from success, learning from failures and learning to sustain for the future. While learning always has outcomes, many outcomes are not directly measurable. However, lessons learned, such as greater awareness of the virtues of consuming what is actually needed and not what is readily available, can become norms. USM, as an institution of higher learning, has a moral and social responsibility to contribute to ESD in a small, but meaningful and effective manner. We believe that these examples of ESD in practice show that sustainability in the future may be forecasted with more hope.

IV. HIGHER EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

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SHIN-ICHI HIRANO, President, Nagoya University, Japan

UNIVERSITIES AS KNOWLEDGE HUBS FOR SUSTAINABLE DEVELOPMENT

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UNIVERSITIES AS KNOWLEDGE HUBS FOR SUSTAINABLE DEVELOPMENT

From the perspective of a world with limited resources, where environmental measures are determined on a global scale, it is no longer possible for one country to proceed successfully in isolation. In other words, at the beginning of this century, the issues confronting human society have become increasingly apparent: rapidly developing scientific technology, whilst creating light in the form of increased welfare for mankind has also created the shadow that threatens mankind's very existence. It is the responsibility of science and learning in the 21st century to promote sustainable development on a global scale by nurturing the light and keeping the shadows at bay. In an increasingly interdependent world, where countries continue to place value on their sovereignty and compete with each other, the need to cooperate to solve problems of a global dimension is self-evident. A world with a new and sustainable order will need to be built, having as its premise a respect for pluralism, as well as tolerance for one another's histories, cultures and religions.

For our part, and in the context of the globalization of education and research, Nagoya University will need to develop its capacity to act as an international knowledge hub, able to respond to issues involving mankind's history. Nagoya University's fundamental objective is to be found in its structural mission to produce world class research and nurture courageous intellectuals endowed with the spirit of humanity. Moreover, whilst building up closer connections in international education, Nagoya University, as a cultivator of human resources capable of taking leadership roles throughout the world, aims to contribute to the development of regions and industries as well as exchange with other countries, particularly those in Asia.

We hope to foster valuable suggestions as to how Education for Sustainable Development can be promoted in an increasingly borderless world, one in which interdependency cannot be overemphasized. I sincerely hope that that even a small step towards sustaining the future can be made through our endeavors.

It is no longer possible for a country to proceed successfully in isolation.

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Rosalyn McKeown is the director of the Center for Geography and Environmental Education at the University of Tennessee. Her current research focuses on sustainability education and on environmental literacy. Dr McKeown has published over two dozen articles in scholarly journals and magazines. She is the major author of the "Education for Sustainable Development Toolkit" and the secretary for the UNITWIN/UNESCO Chair on Reorienting Teacher Education to Address Sustainability. The Chair and associated international network are looking at ways of reorienting teacher education to address sustainability. She also serves as secretary for the UNU Chair on Education for Sustainable Development. In this position she is interested in creating locally relevant and culturally appropriate education that addresses issues inherent in sustainability through changes in programme, practices, and policy.

REORIENTING COLLEGES AND UNIVERSITIES TO ADDRESS SUSTAINABILITY

This paper describes issues and challenges associated with Education for Sustainable Development (ESD) and invites institutions of higher education (IHEs) to think about ways to respond so that future graduates can deal with sustainability issues in their careers and lives. Higher education plays a vital role, not only in shaping the future by educating the professionals of tomorrow, but by creating a research base for sustainability efforts, and providing outreach and service to communities and nations especially related to difficult sustainability issues.

Institutions of higher education (IHEs) are undergoing major changes with the growing global interest in sustainability and the introduction of information and communications technologies (ICTs). Colleges and universities used to be places of merit that served a small geographic region around the campus and those who were fortunate or affluent enough to move to campus while they attended classes. Now, with ICTs delivering courses to remote regions, universities are faced with being placed not only of merit, but also equal access. Students who could not move to campus can now be served by Internet connections. These students will bring interests, viewpoints, and community issues to class work and discussions. New types of students will challenge instructors to make the curriculum relevant to their lives.

The issues and challenges associated with sustainable development (e.g., high illiteracy rates, especially for adults; gender bias across societies; over-consumption of resources; unsustainable production, and widespread poverty) are often not part of higher education curriculum; however, they are highly relevant to the students' future careers as many will become decision-makers and leaders in their lifetimes. Complex issues related to sustainability demand interdisciplinary solutions. A more sustainable future calls for new ways of thinking about the role of a higher education in providing experiences for students that will be relevant to their professional and private lives.

At this point the reader is invited to ponder the following questions about IHEs:

- What is my IHE doing to prepare future professionals to work with, provide services for, and write policy that will promote equity for the poor and excluded members of society?
- What is my IHE doing to promote a just and equitable life for all, both now and for generations to come?
- What is my IHE doing to protect, preserve, and restore the environment so that people of all economic conditions can lead healthy lives?

To illustrate the point that sustainability issues are relevant to the future professional lives of the graduates of IHEs, let us consider the sustainability issue of adult illiteracy. About 875 million adults are illiterate in the world today. For these unfortunate millions literacy is their route out of poverty; however, few administrators or faculty at IHEs are concerned about adult illiteracy. The attitude I have noticed is, "All university students can read; illiteracy is not our problem." This is a rather short-sighted view, because when students graduate they will have to grapple with environmental, social, and economic issues inherent in the quest for a sustainable future. IHE graduates enter ministry jobs in commerce, health, environment, agriculture, etc. where illiteracy affects their ability to implement national plans and reforms. Unfortunately, illiteracy and low education levels limit sustainability options for many nations and make implementing such policy difficult in others.

Again, the audience/reader is invited to ponder the following questions about IHEs:

- How many of my institution's graduates will have careers that deal directly with illiterate adults?
- How many of the graduates' careers will be made more difficult by the social needs of the numerous illiterate population?

To address a complex sustainability issue such as adult illiteracy, IHEs need to look within to identify expertise and resources to apply to the problems. Many IHEs have faculties or departments of pedagogy. Could people with expertise on literacy for children assist with adult literacy programmes? If childhood literacy programmes currently exist, how could the literacy curriculum be revised so it is relevant to the daily lives of adults and motivates them to learn even when it is difficult? IHEs are in excellent positions to create outreach programmes that address sustainability issues. Beyond having expertise, IHEs have an abundant source of volunteer labor in the form of students who are looking for service-learning and internship opportunities. IHEs are also respected in communities, so their programmes will have high potential for good will and participation.

IHEs should identify potential key change agents for a more sustainable world. One such key change agent is the teacher educator. Teacher educators have broad influence in the education community. They train inservice and preservice teachers, write textbooks, sit on curriculum revision committees, advise ministries and local school systems, give talks, and publish. With such a broad sphere of influence they can promote education that will lead to a more sustainable future.

Teacher education is especially important as these future professionals touch the lives of every child enrolled in school. Reorienting teacher education to address sustainability will greatly influence the next generation's understanding of sustainability and whether or not they have the

knowledge, skills, perspectives, and values to lead sustainable lives and to create a more sustainable future.

The UNESCO Chair on Reorienting Teacher Education to Address Sustainability at York University in Toronto, Canada has formed an international network of teacher education institutions in 28 countries, which experiments with different ways of addressing sustainability in the curriculum, programmes, practices, and policies of their own institutions. The Chair and International Network recently produced *Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability* (UNESCO, 2005) in response the United Nations Commission on Sustainable Development (CSD) work programme for Education for Sustainable Development.

SHUICHI NAKAYAMA

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Shuichi Nakayama is Professor Emeritus of Hiroshima University, Japan and currently working at Hiroshima University of Economics. He was the Director of the Institute of Peace Science, Hiroshima University (2002-2003), and Professor of Geography and Curriculum Development at the Graduate School for International Development and Cooperation (IDEC), Hiroshima University (1996-2003). He has chaired the Education Sub-Committee, Japanese National Commission for UNESCO in the Ministry of Education since 2002. In the sub-committee, he served as the Chair of the Working Group for a proposal to UNESCO on implementing the action scheme for the UN's DESD. He has published many articles and books in human geography, especially in the field of regional development of India based on his long experience of field work in the country since 1967. He has also devoted himself to research in geography curriculum development.

AN ACTION PLAN FOR PROMOTING ESD IN HIGHER EDUCATION

There are three basic documents to consider when discussing the promotion of Education for Sustainable Development (ESD). They are: the United Nations Decade for Education for Sustainable Development International Implementation Scheme, the United Nations Millennium Development Goals, and the Earth Charter. It is widely recognized that ESD represents a voyage towards the discovery of new horizons. At the same time, the individuals most concerned agree upon the following three points which state that: (1) the core concept of ESD is changing values for a new era; (2) teachers are the actors changing those values; (3) among all teaching sectors, professionals of higher education are the ones primarily responsible for developing the curriculum to provide teachers and facilitators with the learning methods and practices most relevant to ESD.

ESD's basic values include: respect for the dignity and human rights of all people throughout the world and a commitment to social and economic justice for all; respect for the human rights of future generations and a commitment to intergenerational responsibility; respect and care for the greater community of life in all its diversity, which involves the protection and restoration of the Earth's ecosystems; and respect for cultural diversity and a commitment to build locally and globally a culture of tolerance, non-violence, and peace.

It is important to repeatedly confirm the socio-cultural, environmental, and economic perspectives underlying the idea of ESD. Socio-cultural perspectives encompass human rights, peace and human security, gender equality, cultural diversity and intercultural understanding, health (HIV/AIDS in particular), and governance. Environmental perspectives include natural resources (water, energy, agriculture, biodiversity), climate change, rural transformation, sustainable urbanization, disaster prevention and mitigation. The economic perspective regards poverty reduction, corporate responsibility and accountability, and the market economy.

One of the key strategies for promoting ESD must be capacity building. To approach capacity building for ESD requires a discussion of how to reorient pre- and in-service training programmes for teachers in higher education. My proposal for reorienting teacher education in the context of international cooperation involves setting up two channels strongly supported by the research and development capacities of UNESCO and UNU.

Formal education and non-formal education represent two complementary approaches to ESD. For both, the key stakeholders are teacher education institutions and the various academic associations supported by UNESCO and UNU. They are primarily responsible for

conducting research and developing the ESD curriculum for teacher education. To disseminate the ideas and materials they develop, local teacher training institutions should hold regular training courses for both formal and non-formal educators. There must be two channels for disseminating ESD practices: one is for the formal system and the second for the non-formal. One potential mechanism in the field of non-formal education is the effective use of community learning centers. These are developing in many developing countries, especially in Asia, through the efforts of UNESCO. On the other hand, the UNU/IAS programme for resource centers of expertise, operating since 2005, represents another superb programme for promoting ESD in both developed and developing countries. This programme stipulates that the local groups representing the formal and non-formal sectors should have considerable opportunity to create locally relevant ideas and learning materials. Their best practices can then be effectively applied in both formal and non-formal education.

Effective networking among higher education institutions of teacher education is key to ESD's progress, and I am happy to see international cooperation towards this end growing among international organizations, non-profit organizations, and non-governmental organizations in the Asia and the Pacific region.

KWESI ANDAM

is the Vice-Chancellor of the Kwame Nkrumah University of Science and Technology, Ghana. He is also a Fellow of the Institution of Civil Engineers, Institution of Structural Engineers of the United Kingdom, Ghana Institution of Engineers and a member of the Ghana Academy of Arts and Sciences. In 1999, Professor Andam was elected the 30th President of the Ghana Institution of Engineers. Professor Andam has also been the Chairman of the Governing Council of the African Network of Scientific & Technological Institutions (ANSTI) of UNESCO based in Nairobi since 2001. Professor Andam holds a Ph.D. in the field of computer aided design in structural engineering, and is known for his work on structural loads for which he received the Ultimate Gold Medal from the Ghana Academy of Arts and Sciences.

EMMANUEL FREMPONG

is Dean at the Kwame Nkrumah University of Science and Technology, Ghana, where he is primarily responsible for the welfare of 17,000 students of the university. Professor Frempong was formerly the Dean of the Faculty of Science and responsible for good governance of the faculty. He is also co-ordinator for environmental science programmes at KNUST.

We are active in training programs that seek to develop the productivity of farmers and renewable resource managers.

LOCAL ESD INITIATIVES: GHANA

Paper by EMMANUEL FREMPONG,

Dean of Students, Kwame Nkrumah University of Science and Technology, Ghana.

Presented by KWESI ANDAM, Vice-Chancellor,

Kwame Nkrumah University of Science and Technology, Ghana.

The Kwame Nkrumah University of Science and Technology (KNUST) was founded to provide higher education with special reference to science and technology and to act as a catalyst for the technological development of the country. It was originally established in 1951 as the Kumasi College of Technology.

The University has since January 2005, been fundamentally restructured into six compact and focused colleges namely: Agriculture and Natural Resources, Architecture and Planning, Arts and Social Sciences, Engineering, Health Sciences and Science. These Colleges together consist of 20 Faculties, 69 Academic Departments and 11 Centers with a current student population of 16,316.

The strategic objectives of KNUST during the Decade of Education for Sustainable Development are:

- To develop high level human resource capacity required by the university to fulfill its mission;
- To improve financial resource mobilization and management;
- To provide manpower training, research and innovation in science and technology for national development;
- To expand the IT infrastructure and institutionalize its application in the core business of the university;
- To expand and modernize the physical infrastructure and facilities of the university.

In addition to the purely academic programmes aimed at producing the country's manpower needs, KNUST engages in a variety of activities that have contributed to sustainable development and improved livelihoods. These include but are not limited to community outreach programmes, involvement in conservation programmes, career guidance and counselling programmes, our botanic garden, and linkage programmes.

Through our community outreach programmes, members of staff are actively involved in community outreach through radio and television talk shows, which relate to improved but sustainable agricultural production, renewable natural resources management and rural

development. Several members of staff receive regular invitations from FM radio and television stations to act as resource persons for programs addressing questions related to livelihood enhancement, particularly for resource-poor rural farmers. The KNUST's collaborative association with the University of Guelph seeks to enhance our ability to deliver information via links with rural areas of Ghana.

In addition, KNUST is active in training programs that seek to develop the productivity of farmers and renewable resource managers. Staff members play prominent roles in the activities of many professional and farmers groups including the Ghana Animal Science Association, Ghana Horticulturists Association, Soil Science Association, etc, with several serving in Executive positions. In the College of Agriculture and Natural Resources, training programs on the feeding of livestock and poultry, integrated pest management, soil fertility improvement, and environmental management have been organized at various times.

Members of the College of Agriculture and Natural Resources have continued to be involved in field research that has adopted the participatory approach. The Department of Food Science and Technology, together with Women in Agricultural Development (WIAD), have managed the post-production and marketing component of a Root and Tuber Improvement Programme. The facilities of the College of Agriculture and Natural Resources are available for visits by school children as well as farmers who need advice or want to copy some of the practices adopted by the College farms. These visits are especially useful to the children whose interest in agriculture and renewable natural resources is greatly enriched.

Furthermore, the constituent units of the KNUST, particularly the College of Agriculture and Natural Resources, have been involved in conservation programs since their inception. Indeed the fact that this College has been devoted to biodiversity conservation, utilization and development attests to our devotion to conservation. Some examples include: the Northern Savannah Biodiversity Project (2002-08); Government Plantation Development Program (2004 - present); Forest Resources Creation Project (2001-2004); Forest Resources Management Project – FRMP (1989-1996); Natural Resources Management Project (1998-2003; 2003 - present); Forest Sector Development Project Phases 1 and 2 (2000-2005); Land Administration Project (2003-2008); High Forest Biodiversity Conservation Project (1999-2004); and Wildfire Management in the Tropical Zone (2002-12).

In addition, the university provides career guidance and counselling programmes. Student groups at KNUST, during their annual week celebrations usually visit junior and senior secondary schools (JSS and SSS) in the Kumasi Metropolis to carry out career guidance and counselling programmes to enable the SSS graduates know about the various programmes available in the university and their job opportunities etc. Since most SSS graduates steer away from science programmes and rather seek admission into medicine or engineering, these counseling

programmes enable the SSS graduates to make informed decisions in the selection of programmes at the university. Similarly, JSS graduates are counselled prior to their selection of programmes for SSS education. The student groups also carry out peer education for SSS students on HIV/AIDS prevention.

As mentioned earlier, the university has its own botanic gardens. The KNUST Botanic Garden is one of the five botanic gardens in Ghana and serves three main purposes of research, teaching, and recreation. The garden was established in 1964. The 12.9 hectare of land on which the garden was developed was originally covered by a virgin forest of the semi-deciduous type. The garden is an excellent example of biodiversity conservation.

In terms of linkage programs, KNUST has active academic/research partnerships with educational institutions, non-governmental organizations (NGOs), ministries, departments and agencies (MDAs) and donor organizations. KNUST has about 100 memoranda of understanding (MOUs) with other universities and institutes at the regional and global levels. KNUST now collaborates with the world's leading universities. Most significant of these is KNUST's collaboration through Alliance for Global Sustainability with the Massachusetts Institute of Technology (MIT), the world's de-facto leading university in the field of science and technology. Furthermore, on 20 May 2005 an MOU for the Alliance for Africa Sustainability (AAS) was signed by KNUST, the University of Venda for Science and Technology, South Africa and the University of Lagos, Nigeria for enhancing science and technology. The AAS clearly suggests a passion to develop Africa by sustainable methods and is a potential for accelerated development in Africa.

At local levels, KNUST has mutually beneficial relations with sister universities and research institutes in Ghana, including partnerships with the Council for Scientific and Industrial Research and its related Institutes. Through its colleges, KNUST has very functional relations with the Ministries of Food and Agriculture, Land and Forestry, Education, the Forestry Commission, the Environmental Protection Agency and the Bank of Ghana. In addition, KNUST cherishes its partnerships with donor entities like CIDA (Canada), NUFFIC and Tropenbos International (Netherlands), GTZ (Germany), UNICEF, FAO, UNDP, DFID (Britain), World Bank, IMF, IDA, the European Union, and UNU among others. These partnerships have helped in no small way to make the university an influential and significant stakeholder in national efforts at poverty reduction and creating wealth through Education for Sustainable Development.

In the future, KNUST will continue to pursue its vision of being an institution par excellence in the fight against hunger and deprivation in Ghana and Africa. To do this successfully, the university will continue to seek well meaning partners both locally and internationally and collaborate with them for mutual benefits through Education for Sustainable Development.

KARTIKEYA V. SARABHAI

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Kartikeya Sarabhai is the Founder Director of the Center for Environment Education (CEE) in India, which focuses on developing education and communication programmes and materials for sustainable development. He has been involved in many national and international programmes, and has also been part of many committees of the Government of India. These include greening India's formal education system and initiatives for biodiversity education. He has chaired the IUCN Commission on Education and Communication for South and South-East Asia, and was instrumental in initiating SASEANEE, the South and Southeast Asian Network for EE. He was a member of the Indian delegation to the UNCED at Rio and the WSSD at Johannesburg. He was awarded the "Tree of Learning Award" by The World Conservation Union in 1998, in appreciation of his contributions to the field of environmental education and communication.

DESD: A STRATEGY FOR HIGHER EDUCATION

For over two decades now, very conscious efforts to promote awareness and sensitivity to the issues confronting humanity, emerging from the fundamental interdependence that characterizes life on earth, have been set in motion all over the world. The renewed energy that the United Nations Decade of Education for Sustainable Development has brought to these efforts is noteworthy. Formal education systems at all levels are crucial agents that will drive the change that is envisaged. This paper will confine itself to a discussion of certain pressing issues and possible strategies in the realm of higher education.

In January 2005, an International Conference on Education for a Sustainable Future was organized in Ahmedabad by the Center for Environment Education (CEE), in collaboration with UNESCO, UNEP, the Ministries of Environment and Forests, and Human Resource Development, the government of India, and several other agencies. It was planned as a forum to take stock of what has been achieved so far, to showcase best practices in Education for Sustainable Development (ESD) from different parts of the world, and to set the course for the future. The conference was the first international event worldwide mark the launch of the UN Decade of Education for Sustainable Development. An invitational event for the leadership of Indian universities took place in conjunction with this conference. This event provided an opportunity for vice chancellors, rectors and deans, in dialogue with ESD leaders, to explore the content and pedagogy of environmentally oriented courses at the undergraduate and professional levels, as well as strategies for campus sustainability.

Three significant recommendations of the meeting were on the need to:

- Encourage introduction of the sustainable development theme in every university course;
- Support institutional capacity-building programmes in ESD;
- Expand international collaboration on ESD.

This paper examines further the task before centers of learning in the tertiary sector, as informed by these recommendations, in terms of three distinct interventions:

- Promoting awareness and sensitization of all entrants to higher education (HE), in order to help them become Environmental Citizens, and informed and responsible consumers;
- Infusing SD concepts, perspectives and concerns in professional courses together with education for decision-making, so that professionals should be able to apply principles of sustainability in their work;
- Preparing professionals equipped to drive the ESD process.

Some common enabling mechanisms run across the approaches to all of the above:

- A powerful knowledge center for ESD: knowledge and understanding of the plethora of issues in sustainable development, and philosophy, method and practice in educating for sustainable development are constantly evolving and expanding. In order to keep abreast with the perspectives and understanding as they emerge in different parts of the world, and to have access to information required to substantiate and consolidate these, an IT-enabled knowledge center would prove of immense importance. Beginnings have already been made by initiatives such as the Resource Project envisioned by the Global Higher Education for Sustainability Partnership. However, the infrastructure implications to ensure its desirable scale of utility would be enormous.

- Internships: To provide learning and exposure in a programme of the desired nature and scope, a component of hands-on training in outreach and service to society deserves special mention. It should preferably facilitate the youth of various countries being exposed to local, national and regional realities, as well as those in other parts of the world, and 'learn by doing'. Ultimately, sustainability is something that commitment should be forged for, at the global level, based on improved understanding of intersectoral linkages, and the interlinkages between issues and problems manifest at various levels.

- Strong Partnerships: To complement strengths, compensate weaknesses, and build synergy, among diverse stakeholders, both within and across different countries, regions and parts of the world.

ESD is a crucial input for young adults on the threshold of their lives as active citizens. Their personal and professional decisions and actions will have a significant bearing on environment and society. ESD must therefore permeate all levels and fields of higher education.

The first is the need to foster a strong awareness and sensitivity among all entrants to higher education about what sustainable development is, and to highlight how it is different from conventional notions and forms of development. An approach towards this has to take cognizance of the fact that the tertiary education sector in most countries comprises a general stream and a professional/technical stream. In both, we often see a "compartmentalizing" of subjects, to be taught as separate water-tight disciplines. Where would promoting literacy on sustainability fit in the scheme of things?

In India, the initiative has been greatly strengthened and shaped by the Supreme Court's directive on introducing courses on the environment at all levels of education. The directive accords recognition to the limitations of legislation. Law is a regulator of human conduct, as the

professors of jurisprudence say, but no law can indeed effectively work unless there is an element of acceptance by the people in society. This is where education comes in. We are in a democratic polity where dissemination of information is the foundation of the system. Keeping citizens informed is an obligation of the government. The court has required that universities prescribe a course on environment and consider the feasibility of making this a compulsory subject at every level in college education. The apex body governing institutions of higher education, the University Grants Commission (UGC) has, in turn, mandated that all universities in the country introduce a compulsory foundation course on environment studies at the undergraduate level.

As the links between environment and development have become clearer, globally the concept of environmental education is being redefined as ESD. The United Nations Decade of Education for Sustainable Development (2005-2014) requires us to think in new and effective ways about the interrelated environmental, social, cultural and economic challenges confronting humanity in the 21st century. It is in the light of this redefinition of environmental education, as well as the timing of the introduction of the compulsory undergraduate course in India, that we seize it as an important opportunity for sensitizing students to the challenges of sustainable development.

The value of a separate space and time to deal with the challenge of educating for sustainable development makes sense because ESD incorporates a more extensive range of perspectives and a more comprehensive base for discussion than any one academic discipline can hope to cover. The relevance of such a foundational course is that, in order to evoke responsibility to care for the earth's limited resources, and at the same time ensure an acceptable standard of well-being for all the world's peoples, there has to be a meaningful engagement with the human economic, social, cultural interests that come into play. This is a theme that has informed the thinking on ESD by various experts around the world, but still remains a challenge to translate into practice.

Higher Education for Sustainable Development (HESD) has to deal with the inescapable dimension of value-orientations. It needs to examine what is socially endorsed: the "good-life". It needs to examine what is out there in the dominant, sought-after techno-economic paradigm of development, and to examine the political-economy of this paradigm, its historical location and ecological implications. HESD must also foster critical media literacy to draw connections between how what is out there shapes values and aspirations of the "here and now". For instance, would a young person in India who buys a particular restaurant chain's advertised "Happy Meal" for the equivalent of the daily wage of a laborer in the unorganized sector, re-examine his/her "happiness" in terms of who defines it and how?

HESD needs to help examine personal and social dimensions of value-systems, a continuing challenge for educational programmes meant to further develop concern for environment and sustainable development. To the extent that ESD is about giving shape to a sustainable world, it has to equip individuals with values and motivation in addition to the knowledge and skills required, to engage the learner as “part of the problem” and go on from there. A foundation course, designed keeping all this in mind, can help facilitate this.

The design, very importantly, has to keep in mind the learning outcomes that we seek to attain – say of being more analytical of issues, critical of media messages and so on – and the commitment to actually fostering the learning we envisage must carry right through to the process of evaluating the course. This is a pressing issue. The design of courses and evaluation of student learning are both aspects that bring teacher preparedness into the picture. The challenge would be to try out something based heavily on a strong set of materials or tools and the concurrent use of an appropriate technology. The idea is to develop enough supportive material and a user-friendly facility for access to this information so that a course can be implemented by teachers, with minimal orientation or training (perhaps a day or two). The challenge would be to develop a tool kit that supports the teacher with actual resources or with information on how and where to access these, be they films, slide shows, maps and charts, books, question banks, ideas and guidelines for field visits and action projects, web-based resources, or radio and television programmes. The possibility of dovetailing this effort with the GHESP Resource Project may be explored.

The challenge of incorporating into all disciplines, in a major way, knowledge that has a bearing on sustainable development also relates to the second thrust area in HE that needs to be emphasized – the need to make education in the professional/technical streams more socially and environmentally responsible. This would be non-negotiable in order to ensure that persons so educated bring knowledge and skills to further sustainable development into their sphere of influence and action. Professional practice in most transition and modern societies enjoys unique prestige and visibility. Promoting sincere deliberation on ecological and social sustainability in medicine, agriculture, forestry, law, business and industry, engineering, education, communications or architecture, would prepare citizens with the ability to act on this information. This in turn would bring us closer to the goal of sustainable development by virtue of the tangible contribution of such sensitized professionals in shaping a more sustainable society. It would also be manifest as the very concrete ability of professionals to inform and educate the preferences of the specific communities to whom they are service providers.

If one were to look at professional education in architecture for instance, it would be interesting to do an audit of the bricks and cement that an architect is capable of “burdening” the earth with during a working lifetime – to sensitize students to the quantity of topsoil being depleted and

the energy being consumed, and thereby perhaps inspiring at least a few minds to conceive of more an eco-friendly design.

In more general terms, the strategy within disciplinary specializations – whether in the general stream or the professional/technical streams – in order to educate about sustainable development would be imparting students with:

- skills in Environmental Impact Analysis: imparting at least a rudimentary ability to analyze the environmental and societal impact of their profession-related decisions and actions;
- the ability to capture knowledge and make informed choices through the awareness and appropriate use of databases which would form decision support tools providing information on best practices, research, and appropriate technology.

The above would be in addition to providing opportunities for internships to facilitate exposure and hands-on learning.

While the first intervention that was proposed – ESD for all entrants to higher education – would ideally create more conscious and discriminating consumers, the fact remains that the options to which this choice can be exercised are limited. This is where the second intervention assumes significance. Beyond the specialized knowledge professionals possess, by virtue of their training, if they can bring to bear on their work discerning use of knowledge of sustainability issues, they will add to the “choices” that consumers can exercise a right to decide on. Experts in the profession, facilitated by sustainable development specialists (ideally from among them), have to be called upon to identify opportunities for infusion within the existing curriculum and design professional programmes in this light. Here, what is being assumed is that some professionals do not alter their practices in favor of sustainability because they are ignorant of the possibility to do so. That being the case, the ethical imperative alone may not promote a change in professional practices. Another possibility that could be explored is an instrument of regulation at the level of professional certification. But that would be over and above the ESD input.

A third thrust area for HE would be developing ESD professionals equipped to take on the challenges of the Decade of Education for Sustainable Development (DESD). The issue is made both complex and extremely relevant by two considerations: the transdisciplinarity of ESD and the need to strengthen communication for SD in arenas beyond the confines of formal education systems. Educators for sustainable development, refer not only to professional educators. Professionals equipped to drive the ESD process are professionals in the formal education sector; non-formal education, including media personnel and others; and field-level professionals.

The implications of preparing the first group, new teachers (at all levels: primary, secondary and tertiary) and those already in the profession for teaching the principles of sustainability cannot be emphasized enough. The education of teachers merits special attention within the ambit of higher education. Making the connection between the education of teachers and the ecological and social literacy of students as an outcome of education is a key step toward sustainable development. Teacher preparedness to convey the broad spectrum of issues and content related to the environment, through the appropriate methods, deserves top priority. Teachers need to be equipped with sound disciplinary knowledge; understanding of sustainable development and the imperative to educate for it; pedagogical technique and philosophy; and the ability to constantly renew knowledge and perspectives in favor of sustainable development.

The education of professionals who can communicate for sustainable development through their work involves reaching out to those who wish to become or are media professionals, rural development professionals, civil servants, NGO staff, community workers and managers of commercial and industrial establishments. Engagement with the challenge of preparing educators for ESD in diverse fields has begun in earnest in different parts of the world. Programmes, designed keeping in mind the need to increase ability to communicate effectively about sustainable development and foster leadership skills required among diverse “multipliers” in society, are available today. An intensive master’s level programme designed to reach out to people going into diverse occupational fields would add momentum to this process. It would comprise a set of core courses to strengthen theoretical and conceptual understanding of sustainable development and ESD, coupled with an additional set of courses that would inform communicating effectively for sustainable development in students’ chosen occupational areas. Work in this area has begun, and needs to be promoted in appropriate institutions in different parts of the world. The mandate of these institutions would be to work with media professionals; those working with NGOs and government agencies; and managers of commercial and industrial establishments, among others. They should equip them with knowledge of sustainable development; professional knowledge that has incorporated the goals of sustainable development; and skills to communicate for sustainable development through their professions.

It also needs to be said that a professional development programme as proposed can support HESD objectives when coupled with a teaching mechanism like Open and Distance Learning (ODL). ODL perfectly represents the paradigm of education required – a decentralized and learner-centric one – to complement the paradigm of development seeking to be furthered. Given that practicing professionals can rarely take time off from work to attend classes in a face-to-face mode, and that knowledge and application of technology in various fields is constantly evolving, technology mediated open and distance education presents a useful tool. It will enable professionals to adopt practices and philosophies of sustainable development in a manner that will facilitate learning that is ongoing and lifelong. Moreover, with ODL,

working professionals can bring to bear on their work, a valuable amalgam of know-how derived from experience and engagement in a particular socio-cultural milieu, together with knowledge they acquire pertaining to sustainable development issues specific to their field.

A third group of educators are those embedded in communities who may be called field level professionals. CEE's experimental project focused on building the capacity of Rural Community Entrepreneurs. The first phase of the project (2000-2003) was concerned with developing a methodology to enable rural higher education institutes to increase the abilities of their students to facilitate sustainable natural resource management in the rural areas. It engaged in training of teachers, students and alumni; development of learning resources; developing resource centers in selected institutes and helping students plan and implement action projects. In its second phase (2004-2007) graduates of the programme were selected and equipped with knowledge and skills through additional training to initiate and add momentum to diverse activities underway in participatory development.

A Master's Programme in Education for Sustainable Development (MESD) if developed and offered, could serve as a professional development programme that provides the critical mass to translate awareness of sustainable development issues into action. Ideally it would be developed and run with inputs from experts from various disciplines and EE/ESD experts and an international Advisory Committee to guide the process. A few institutions where this programme can be offered need to be identified. It will need to be designed keeping in mind the need to increase knowledge and leadership skills relative to sustainable development and educating for sustainable development among diverse "multipliers" in society, including those who wish to become/are teachers, media professionals, rural development professionals, civil servants, NGO staff, community workers and managers of commercial and industrial establishments. Some salient features of the course design would be:

- content to build conceptual clarity and theoretical understanding in sustainable development and in disciplinary components;
- method and approaches to ESD;
- learner controlled curriculum development and revision;
- community outreach and internships: to provide practical learning situations to students and service to the community.

The way forward for all three thrust areas that have been dealt with requires creating a strong awareness and sensitivity among all entrants to HE about sustainable development; making the practice of each profession more socially and environmentally responsible; developing ESD professionals equipped to take on the challenges of DESD; and addressing the issues that emerge in connection with them.

Those include policy level and institutional support for academic renewal and research, and development to inform knowledge creation for dissemination and consolidation.

The need for dialogue and partnership between the “world of work” and the education system rests on a strategy centered on partnerships. The partnerships referred to have to be forged at and across many levels. National focal points for sustainable development in the various countries could initiate the dialogue at the policy-making level, as well as draw upon the strengths of universities and centers for higher learning, and catalyze the forming of academic committees/task forces. Dialogue also needs to be initiated and sustained within countries, between academia, government and the private sector as well as with professional bodies and associations to ensure sensitization, practical relevance of, and concrete commitment to HESD particularly with regard to financing. Scholarly exchange and resource mobilization and sharing, at the local, national, regional and international levels for curriculum, material and faculty development, is another key requisite. ESD requires that these partnerships are based on an understanding and appreciation of the need for knowledge sharing processes to permit flexibility to adapt to the specific needs and demands of the target audience.

ESD is a crucial input
for young adults on the threshold
of their lives as active citizens.

V. TECHNOLOGY AND SUSTAINABLE DEVELOPMENT

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A. H. ZAKRI

Director, Institute of Advanced Studies, United Nations University (UNU-IAS)

A national of Malaysia, A. H. Zakri is Director of Institute of Advanced Studies, United Nations University (UNU-IAS). He is also the Co-Chair of the Millennium Ecosystem Assessment Board (2001-05) - a four-year U.N. study undertaken by 1,360 experts from 95 countries to assess the state of the world's ecosystems. He is Vice-President of the Third World Academy of Sciences (TWAS); member of the Board of Trustees of the Institute for Global Environmental Strategies (IGES); member of the ICSU-ISTS-TWAS Consortium ad hoc Advisory Group on "Harnessing Science, Technology and Innovation for Sustainable Development"; member of the Academic Advisory Committee of the Arab Fund Fellowship Program; and member of the International Cosmos Prize Committee.

ESD AND THE PARADOX OF TECHNICAL TRANSFORMATION

It is indeed a miracle that this blue planet is host to an estimated 30 million species of living things, many of which are still undiscovered by science. It is more astonishing that only one of these species (*Homo sapiens*) has evolved to such an extent that we've elevated ourselves to the role of guardian of nature's creations.

Thanks to our technological advances, and our modern way of living, we have stupendously transformed the face of the Earth and degraded the ecosystems upon which our lives depend on. What a paradox this is.

Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.

Ponder this:

- More land was converted to cropland in the 30 years after 1950 than in the 150 years between 1700 and 1850.
- 20% of the world's coral reefs were lost and 20% degraded in the last several decades.
- 35% of mangroves have been lost in the last several decades.
- 50% of all the synthetic nitrogen fertilizer ever used has been used since 1985.
- 60% of the increase in atmospheric CO₂ since 1750 has taken place since 1959.

These are the findings of more than 1,300 experts from 95 countries working over a period of four years in what is known as the Millennium Ecosystem Assessment, the largest assessment of the health of Earth's ecosystems.

We are running down the account of our natural assets at a breakneck pace. The biological state of Earth's rivers, forests, and mountains may seem a remote concern, but the truth is that we each depend far more than we may realize on the web of life. The food and freshwater that keep us alive, the wood that gives us shelter and furniture, even the climate and the air we breathe: all are products of the living systems of the planet. Right now, human activity is straining the potential for the planet's ecosystems to sustain future generations.

There is a saying in the Malay language that says, "If you lose your way, go back to where you started." After all, as British Prime Minister, Tony Blair declared during the World Summit

Human activity is straining the potential for the planet's ecosystems to sustain future generations.

on Sustainable Development (WSSD) in Johannesburg in 2002, "We know the problems. We know the solutions." But, do we have the wherewithal – the leadership, the conviction and the commitment to do something about it? The political will. That is the 500-billion dollar question posed to us. I believe this is where Education for Sustainable Development can come in.

It entails the enlightenment of an array of multistakeholders – the school-children, the housewives, the salarymen, the captains of industry, the decision-makers and our political masters. It can start with the spirit of *"mottainai"* or the 300-year-old practice of the winter flooded rice field in Tajiri. It could be the transboundary Regional Center of Expertise of the Rhine-Meuse region or the concept of "University in a Garden" in Penang. There can be many modes of outreach, including e-learning through the Global Virtual University, or through higher education itself.

JOHN FIEN

RMIT University, Australia

John Fien is Professor of Sustainability at RMIT University, Melbourne, Australia where he works across the Business, Design and Social Science Faculties for facilitating the development of teaching and research to further the social change processes that underlie sustainable development. An interdisciplinary background in education and training, natural resource management, public participation and sustainable consumption equip him to work across this broad sustainability agenda and to develop partnerships of university research teams, business and industry, government, NGOs, schools and communities. In recent years, he has been a resource person for UNEP and UNESCO in Education for Sustainable Development at the Commission for Sustainable Development in New York and at the World Summit on Sustainable Development. For UNESCO-Paris, he wrote the review of Education for sustainable development from Rio to Johannesburg and contributed to the Framework for the UN Decade of Education for Sustainable Development. He also wrote and designed a UNESCO multimedia teacher education programme, Teaching and Learning for a Sustainable Future.

TEACHING AND LEARNING FOR A SUSTAINABLE FUTURE: UNESCO'S NEW MULTIMEDIA TEACHER EDUCATION PROGRAMME

Educating for a sustainable future is a formidable challenge. How can we better understand the complexity of the world around us? How are the problems of our world interconnected, and what does that imply for their solution? What kind of world do we want for the future, within the limits of our Earth's life support systems? How can we reconcile the requirements of economy, society, and the environment?

Such questions, of course, are not new and, in its capacity as the specialized agency for education within the United Nations system, UNESCO has addressed them over a period of many years. However, as Task Manager for Chapter 36 of Agenda 21, UNESCO has been grappling with these questions with renewed vigor. The new vision of education for a sustainable future places education at the heart of the quest to solve the problems threatening our future. Education – in all its forms and at all levels – is seen not only as an end in itself but also as one of the most powerful instruments for bringing about the changes required to achieve sustainable development. Teachers, of course, are vital actors in this process and consequently have been given special attention.

Teacher education is a priority for UNESCO and, indeed, for the international community as a whole. Within its special work programme on education, the United Nations Commission on Sustainable Development invited UNESCO to make a significant effort to help teachers worldwide not only to understand sustainable development concepts and issues but also to learn how to cope with interdisciplinary, value-laden subjects in established curricula. *Teaching and Learning for a Sustainable Future* is UNESCO's response to that challenge, and a major contribution to the United Nations World Summit on Sustainable Development (Johannesburg, September 2002) and the UN Decade of Education for Sustainable Development.

Teaching and Learning for a Sustainable Future is a multimedia teacher education programme published by UNESCO. Its 25 modules provide around 100 hours of highly interactive activities designed to enhance the teacher's understanding of sustainable development and related themes. It also develops practical skills for integrating sustainable development themes into the school curriculum, and for using the teaching methods best suited to the knowledge, values and citizenship objectives of educating for a sustainable future.

UNESCO and the international community in general, believes that we need to foster – through education – the values, behavior and lifestyles required for a sustainable future. Indeed, sustainable development is not so much a destination as a process of learning how to think in terms of “forever”. Sustainable development involves learning how to make decisions that consider the long term future of the economy, ecology and equity of all communities. Building the capacity for such future-oriented thinking is a key task of education.

Teaching and Learning for a Sustainable Future is rooted in a new vision of education, a vision that helps students better understand the world in which they live, addressing the complexity and interconnectedness of problems such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, health, conflict and the violation of human rights that threaten our future.

This vision of education emphasizes a holistic, interdisciplinary approach to developing the knowledge and skills needed for a sustainable future as well as changes in values, behavior, and lifestyles. This vision requires us to reorient education systems, policies and practices in order to empower everyone, young and old, to make decisions and act in culturally appropriate and locally relevant ways to redress the problems that threaten our common future. *Teaching and Learning for a Sustainable Future* will enable teachers to plan learning experiences that empower their students to develop and evaluate alternative visions of a sustainable future and to work creatively with others to help bring their visions into effect.

There are over 60 million teachers in the world – and each one is a key agent for bringing about the changes in lifestyles and systems we need. For this reason, innovative teacher education is an important part of educating for a sustainable future. The multimedia format of *Teaching and Learning for a Sustainable Future* means that it can be accessed and used in a great many ways by teachers, student teachers, teacher educators, curriculum developers, education policy makers and authors of educational materials.

The programme’s objectives are:

- To develop an appreciation of the scope and purpose of educating for a sustainable future.
- To clarify concepts and themes related to sustainable development and how they can be integrated in all subject areas across the school curriculum.
- To enhance skills for integrating issues of sustainability into a range of school subjects and classroom topics.
- To enhance skills for using a wide range of interactive and learner-centered teaching and learning strategies that underpin the knowledge, critical thinking, values and citizenship objectives implicit in reorienting education towards sustainable development.

- To encourage wider awareness of available Information and Communication Technologies (ICTs), of the potential of multimedia-based approaches to education and professional development and of the Internet as a rich source of educational materials.
- To enhance skills in computer literacy and multimedia education.

The programme was developed after extensive consultation between UNESCO and teacher educators in many parts of the world. The Centre for Innovation and Research in Environmental Education at Griffith University, Australia, prepared the original drafts of the materials using resources from UNESCO and other international organizations as starting points.

An international reference group and over 50 programme specialists within UNESCO advised on the text and pedagogical approaches used in the programme to ensure that the programme is educationally sound, accurate and up-to-date, fair in its treatment of issues, and culturally appropriate for use in international settings. The programme has been featured in many workshops and conferences during its development phase and the comments of participants were integrated into the programme as it was being prepared.

Multimedia-based learning is becoming increasingly popular, and while it has limitations, and certainly should not be seen as a substitute for face to face interaction, it does have numerous advantages for teacher education. For example, the information contained on the Internet is unlimited and evolving. It is up to date, inexpensive to obtain, and searchable. It also reflects the views of many authors and sources of information. Multimedia professional education can also be highly interactive and engaging through the use of animation, audio and video files, games and on-line discussions. All these can be undertaken at any time and at any place and without the need for an outside workshop facilitator. The programme is available in two multimedia formats – on the Internet at www.unesco.org/education/tlsf and as a CD-ROM from UNESCO.

HARALD HOLT

Global Virtual University (GVU)

Harald Holt is the Director of the UNU Global Virtual University, hosted by GRID-Arendal in Norway. He has nine years of experience in research and development work, primarily related to ICT, ten years of experience in international information and telecommunications systems in Det Norske Veritas, United Nations Environment Programme (UNEP), and Telenor. He has managed telecommunications networks and services nationally and internationally. He holds an MSc in Electrical Engineering from the Norwegian Technical University, and an international MBA from the Norwegian School of Management (1996).

E-LEARNING AND STUDENT SUPPORT IN GLOBAL ENVIRONMENT AND DEVELOPMENT STUDIES

The Global Environment and Development Studies (GEDS) study programme, which introduces students to pressing environmental and development issues at global as well as regional levels, is offered through the UNU/GVU partnership network. This two-year programme is designed to provide students with knowledge for dealing with the complexity and interdependence of environment, development activities and decision-making processes. The core courses of the first semester are structured so that any partner university in the network can use them as an introduction semester for their respective specialization in the GEDS programme.

On-line learning is the basic educational method for the programme. Most of the learning takes the form of e-learning activities on the Internet. As the course has a mainly socio-cultural approach, online and face-to-face group work, discussions and joint assignments are important. Each student is expected to participate actively, taking his or her share of responsibility for their own learning, and also taking part in the development of an optimal common learning environment.

Because, distance studies are associated with high dropout rates, a face-to-face introduction knits the group of students and tutors together in a network of personal relations strong enough to keep up motivation, enhance and facilitate online collaboration, and strengthen the learning environment. Many distance students complain that they have little opportunity to discuss difficult issues in their studies informally with peers. In my own experience as an online tutor as well as an online student, I have no doubt that tutor support is crucial for a good learning environment.

Strategically, face-to-face sessions make the transition from a physical to a virtual classroom as seamless as possible by motivating, inspiring, building confidence, building personal relations, overcoming the technology barrier and implementing the virtual classroom when all are physically present. Students have individual needs for support. In the beginning, when feelings of alienation result from an unknown learning environment, new curriculum and terminology and reassurance and counselling are obviously important. The student needs guidance to cope with new and different ways of doing things.

Of course, a good Internet connection and the availability of group rooms are prerequisites to allow the students do at least some work in the evenings. The accommodation building

should also facilitate bringing the group together socially. The face-to-face period is the most expensive part of the programme. It is therefore justifiable to make an intense programme, where training in relevant technology, learning methods and procedures, study techniques, support systems, cognitive subject matter, social knitting and exploring the surroundings all get their share of the timetable. Connectivity in developing countries is still problematic, and the digital divide will prevail for many years to come.

Starting up online education is challenging in many ways. Investments can be considerable, and many large e-learning projects have failed. Experience so far indicates that a strategy for good results and high student retention is to focus more on the needs of the learners and less on what the educational institution can deliver. For long-term studies, support-led courses seem to inspire and motivate more and give a richer learning environment. Even though ICT technology can provide nearly mesmerising educational material, this is not sufficient for most students to overcome the isolating experience of distance education and self-studies. Systems for student support are therefore essential. Collaborative e-learning with peers and professional tutor guidance giving a feeling of personal presence are as a rule needed for successful distance education.



The Decade is a vehicle of educational change and mobilization aimed at making sustainable development a concrete reality for all of us – individuals, organizations and governments.

KOICHIRO MATSUURA,
Director-General, UNESCO

HANS VAN GINKEL,
Rector, United Nations University

Education serves as a powerful tool for moving nations, communities, and households towards a more sustainable future.



TOSHIO KOJIMA,
Vice Minister for Education, Culture, Sports,
Science and Technology, Japan



We must deepen our collaboration to
achieve the common goal of
constructing a sustainable society.

BOUNTIEM PHISSAMAY,
Minister to the Prime Minister's Office, President, Science,
Technology and Environment Agency (STEA), Lao PDR

We consider education
to be the basic and
important tool that links
the three pillars of the
economy, society and
environment together
under our sustainable
development strategies.



SHIGERU SUMITANI,
Vice Minister for Administration,
Ministry of the Environment, Japan



We must look not only to environmental education, but also to education focused on development and social welfare, on diverse cultures and histories, and on peace and human rights education.



SHIN-ICHI HIRANO,
President, Nagoya University, Japan

It is no longer possible for a country to proceed successfully in isolation.

MUTSUYOSHI NISHIMURA,
Ambassador for Global Environmental Affairs,
Ministry of Foreign Affairs, Japan



The development of hybrid automobiles and the exploration of biofuels as new energy sources are examples of the ways in which we are applying technology to approach environmental problems.



ROB FENWICK,
Steering Committee for the Decade
of Education for Sustainable Development,
New Zealand

New Zealanders feel strong emotional associations between economic well-being and their natural environment.

KARTIKEYA V. SARABHAI,
Director, Center for Environment Education, India

ESD is a crucial input for young adults on the threshold of their lives as active citizens.



ATSUKO TERAZONO,
Alliance for Global Sustainability,
University of Tokyo Student

Young people should more actively participate in the processes of decision making at local, national, regional and global levels.

Youth have always been a major force in initiating change and as such must be involved in ESD planning and decision making processes.

SHELDON SHAEFFER,
Director, UNESCO Bangkok



Sustaining does not mean simply maintaining the status quo.

MAMORU MOHRI,
Astronaut and Executive Director/CEO,
National Museum of Emerging Science and
Innovation, Japan



We need to guarantee quality education for all so that every citizen can participate in the selection and pursuit of the best path for the sustainable development of their community and their country.



LIDIA BRITO,
Eduardo Mondlane University, Mozambique

EMIL SALIM,
Professor, University of Indonesia Member, Asia-Pacific Forum
on Environment and Development



Sustainable development requires a system of life-long learning and education that transforms values.

We are active in training programs that seek to develop the productivity of farmers and renewable resource managers.

Respect for nature is at
the heart of traditional
Asian cultures.



AKITO ARIMA,
Former Minister of Education, Japan



KWESI ANDAM,
Vice-Chancellor, Kwame Nkrumah University
of Science and Technology, Ghana

Peace-building education attempts to build peace in peace-time and post-conflict societies through education.



HISAE NAKANISHI,
Nagoya University, Japan



CARL LINDBERG,
Chairman, National Committee on Education
for Sustainable Development, Sweden

We must create a feeling of global responsibility - this is the point of ESD.



A.H. ZAKRI,
Director, UNU-Institute of Advanced Studies

Human activity is straining the potential for the planet's ecosystems to sustain future generations.





Sustainable development issues tend to transcend national boundaries and coalesce around problems shared by neighbouring countries.

HANS D'ORVILLE,
Director of the Bureau of Strategic Planning,
UNESCO



KEITH WHEELER

Vice Chair, Committee on Education and Communications
World Conservation Union (IUCN)

Keith Wheeler is the Deputy Chair of the Commission on Education and Communication for the IUCN, and Director for the World Conservation Learning Network (WCLN). In addition, he is the President of the Foundation for Our Future at the Center for a Sustainable Future in Shelburne, Vermont, USA. The Center for a Sustainable Future has pioneered e-learning for sustainable development capacity building in the public and private sectors. Mr Wheeler was the first Executive Director of Global Rivers Environmental Education Network (GREEN), a 135 nation international non-governmental organization. He has served on a number of commissions and task forces including the President's Council for Sustainable Development, Co-Chair of the White House Initiative on Education for Sustainability and the National Forum for Partnerships Supporting Education about the Environment, Commissioner for the International Union for Conservation and Nature (IUCN), Sustainability Advisor to the General Motor's Corporation and the US Department of Energy. He has published a book entitled *Education for Sustainability: A Paradigm of Hope*.

E-LEARNING'S CONTRIBUTION TO ESD

Sustainable development can be approached as a classical development process with parameters of social, economic and environmental concerns. It also can be described as an ideal state or condition for policies and management practices to aim at. The concept of sustainable development is often specifically linked to issues of developing countries. In a rapidly globalizing world, however, sustainable development means change (transformation) from current practices and policies towards new practices and policies. To realize these changes, learning is one of the important aspects of capacity development. The IUCN World Conservation Learning Network (WCLN) has begun to characterize this transformational learning as New Learning. It takes place at the individual level (new knowledge, new skills), the institutional level (new priorities, new procedures, and new practices) and the social level (new agendas, new partnerships, new ways of interaction and participation).

When facing the questions of how to meet the challenges defined by the Millennium Development Goals (MDG's) and how to build the capacity of individuals, organizations, and governments to meet these complex sustainable development challenges, it becomes clear that our focus must be on impact. E-learning directed towards Education for Sustainable Development must, therefore, be judged by the ongoing actions that stakeholders take. Furthermore, (ESD) must strive to tackle real world issues, facilitate collaboration and knowledge sharing, and integrate learning into workflows.

The context of our challenge is defined by the following statistics. As of March 2005, worldwide Internet penetration had reached 13.9%. Of this Internet penetration, 66% has occurred in ten countries or regions (Sweden, Hong Kong, Denmark, Norway, U.S.A., Australia, Netherlands, Iceland, Canada, and South Korea). 60% of the world largest economies are corporations, 60% of the world's ecosystems are degraded, and 60% of the world's population lives on under US \$4.00 per day.

In order to promote e-learning in a globalizing world, we must ask how e-learning can build our capacity to meet the Millennium Development Goals challenge and how can it support ESD. It is important, in this case, to consider the state of "best practice" in e-learning today, the IT trends which will change e-learning during the Decade, and the convergences which may occur among our e-learning market articulation models, our e-pedagogical models, and our e-knowledge models. Finally, we need to ask which audiences represent the prime target for e-learning that will have the greatest impact on our planet's sustainability.

In considering the ways that e-learning can build capacity to support ESD, there is good news and bad news. Given the present levels of Internet penetration, the good news comes from Malcolm Gladwell, whose book "The Tipping Point" shows that 13% is the magic percentage at which social transformation can tip. By finding and reaching those few special people who hold so much social power, we can shape the course of social epidemics. The bad news is that we have not identified and reached those special people. E-learning, however, can afford a way to identify and reach a significant number of those special people who are the key agents for successful change.

What is the state of best practice in e-learning today? Today's best practice is being shaped by mobile, ambient technology. It is changing the dynamics of how we will live, work, and learn in the future. These new experiences will shape behaviors, practices, and social groupings for knowledge sharing. Today's best e-learning represents a blend of structured or directed learning and unstructured or autonomic learning. Between now and the year 2010, best practice in knowledge sharing and e-learning will be substantially reinvented in all settings —education, business, government, associations, and other not-for-profits. Today's "best practice" is engaged in deploying e-learning technologies in integrated enterprise, organizational, and workflow models. In the process, e-learning and knowledge management will both grow and become fused.

Technological drivers for e-learning over the next decade include the Internet, video games, ubiquitous computing and pervasive computing, educational simulations, and blogging. Internet browsers already bring distant experts and archives to us, and the next generation of the Internet is faster and offers free streaming video and other high-bandwidth activities. This will make technology-based, inquiry-driven projects possible at all levels of education. Video games will be the next generation of learning and training tools whose the potential uses extend to real-world problems. We may soon be using games and simulations to teach people to create sustainable solutions to today's most pressing environmental, social and economic issues. This will quickly evolve to an interface through a multi-user virtual environment (MUVE), in which users imagine themselves on the other side of their screens, within the virtual world. Participants use avatars (self-representations produced as computer graphics) to interact with other participants' avatars, computer-based agents, and digital artifacts. There are many multiplayer online games online today that are already employing these technologies.

Ubiquitous computing and pervasive computing refers to a combination of mobile information and communications technology (laptops, notebooks, personal digital assistants, cell phones and fused-function devices) and ubiquitous computer technology (the embedding of small, low-cost devices in clothing, appliances, cars, automobiles, work settings, and other places). Instead of staring at a screen or imagining themselves on the other side of the screen, users wander through the real world with wireless mobile devices (WIMS) that allow them to

carry the virtual world with them. This interface allows users to interact with smart objects in the real world. In essence, this means that we will come to experience knowledge differently.

Educational simulations will be able to adjust themselves to the learning styles, processing speeds, and skill levels of individual users. They will even be able to accommodate optimized student learning teams whose members may be drawn from all parts of the world. Simulations will be constantly upgraded to reflect new knowledge developments in the given field. The successful completion of assigned missions will serve as one form of learning assessment, and simulation software will be intelligent enough to record the time spent on each task, to track student learning paths and completed assignments, and to use that data to determine when students have mastered the content.

Finally, blogging can also represent an e-learning tool. Instructional blogging can operate as a knowledge-centered instructional tool. In this model the instructor involves students in research activities, engages them in discussions with practitioners, and leads them through developmental concepts of the discipline's knowledge domain.

We are facing a convergence of knowledge ecologies (infrastructures, processes, capabilities and cultures). The World Conservation Union (IUCN) Commission on Education and Communication's response is that ESD means learning for change. The following outstanding issues, however, remain in the questions of:

- How to continually improve the competency of professionals and organizations in environmental and conservation management to enable them to respond to change;
- How to more effectively integrate environmental concerns in development for sustainable solutions – assisting planners, engineers, managers, conservation professionals, educators, etc. to break down sectoral responses;
- How to promote enhanced abilities to identify and meet developmental challenges, in a sustainable manner, when capacity must be learned by doing, over time;
- How to provide professionals in each community with tailored, situation-specific data, information & skills to meet needs?

The World Conservation Learning Network (WCLN) focuses continually on improving the competency of IUCN stakeholders - both professionals and organizations in environmental and conservation management as a response to change being driven by globalization. As organizational learning continues to evolve, learning solutions will become more geared toward the specific needs of organizations and more closely embedded in the explicit activities of the workplace.

New Learning should embrace a range of strategically planned and managed learning for change interventions at the individual, organizational, and social level. It should be based on demand articulation, end user participation and the introduction of innovation. In addition, it should incorporate specific use of web-based “any-time-any-place” professional updating support for up-scaling lessons learned into the next phases of the marketing cycle.

Our progress towards addressing the challenge of new learning for sustainable solutions includes involving over 550 representatives from universities, international, regional and national environmental organizations in our work within the past 15 months alone. Furthermore, we have established relevant working groups to develop the Learning Network products and services.

In creating an “Open Source” Network, we work in five key areas, namely: establishing a community of practice for academic and professional exchange; networking networks and know-how; distance learning products and distribution; dialogue on capacity development and marketing and communication. We encourage you to support our efforts by sharing your views; information about your courses, knowledge or research on the WCLN portal; joining a WCLN working group; and by becoming a member of the CEC.

Over the last decades a range of New Learning opportunities that go far beyond the classical teaching and training methods of graduate and postgraduate courses and training workshops have emerged. These learning opportunities add new forms of learning to the classical approaches, which have also retained their value. New Learning varies from on the job professional updating to communities of practice, inter-disciplinary learning, exchange networks and e-learning. New Learning interventions are no longer supply driven, but demand driven. They are more about facilitating than teaching and offer opportunities to develop individually or institutionally rather than prescribe technical or social solutions. New Learning represents an investment in the future of individuals, organizations, and societies. To achieve sustainable development in a globalized world, 21st century knowledge management must bridge with 21st century learning management to assure that individuals, organizations and society can have the appropriate knowledge and skill resources to take the necessary sustainable actions.

VI. TAKING
EDUCATION FOR
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FORWARD

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EMIL SALIM, University of Indonesia, Member of the United Nations High Level Advisory Board
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BOUNTIEM PHISSAMAY, Science Technology & Environment Agency (STEA), Lao PDR
LAO PDR'S RESPONSE TO ENVIRONMENTAL CHALLENGES

ATSUKO TERAZONO

Alliance for Global Sustainability,
University of Tokyo Student Community, Japan

Atsuko Terazono is a Ph.D. student at the University of Tokyo, Japan. She currently majors in Natural Environmental Studies. She is involved in the student community activities associated with an international research framework called Alliance for Global Sustainability, consisting of four universities: Massachusetts Institute of Technology, Swiss Federal Institute of Technology, Chalmers University of Technology and the University of Tokyo. As chairperson of the University of Tokyo Student Community, her activities have included working in areas of climate change and water issues, conducting workshops to promote communication and interactions among university students at local, regional and global levels, and jointly hosting an Annual Meeting of the World Student Community for Sustainable Development. She has also participated in the Johannesburg World Summit on Sustainable Development as well as several public youth conferences. Last year, she started a working group for students and young citizens to study and contribute to sustainability education.

Young people should more actively participate in the processes of decision making at local, national, regional and global levels.

YOUTH'S COMMITMENT TO ESD

Young people are key actors holding responsibility for not only the future, but also for today. They are characterized by their energy, vigor, flexibility, and potential for development, and are a major force in changing the present society, while also guiding the future. Youth, therefore, should be clearly recognized as one of the important stakeholders who have a collective responsibility for Education for Sustainable Development (ESD). As stakeholders, young people should try to participate in major relevant activities at various levels. We should more actively participate in the processes of decision making at local, national, regional and global levels. To do so, we must realize the importance of taking initiative ourselves to promote our place in participatory processes and collaboration with other stakeholders, including governments, international institutions, NGO/NPOs, industry, and media. We may also need to request governments or organizations to support or ensure youth participation.

Young people are expected to play significant roles in raising public awareness about initiatives like the Decade of Education for Sustainable Development and the Millennium Development Goals, as well as about their individual ownership and responsibility for sustainable development. Such information can be made more accessible and good practices can be shared in public through youth activities. The scope of youth activities should be gradually expanded and oriented towards ESD now that there are significant numbers of youth activities around topics such as environmental protection, HIV/AIDS, gender inequality and so forth. In addition, efforts should also be intensified to integrate ESD into formal educational curricula at all levels. Young people should have opportunities to participate in the development processes of such curricula.

When it comes to educating our peers, capacity development activities should be promoted. Young people experience capacity development through youth activities that allow them to learn through action. Their awareness is raised by participation and their views are broadened through interaction. Dialogue and peer education among youth is essential. Also, sharing information on youth activities is crucial to inter-linking these activities in a manner that makes them more effective. Last but not least, changes in lifestyles and values are key for sustainable development. In the Asia-Pacific region, there are many activities that youth have undertaken to improve daily life, such as initiating recycling shops, conducting "No Thanks Plastic Bags" campaigns, and so on. These kinds of activities should be further promoted as concrete steps to mobilize individuals and whole communities. Also, the importance of local context should be emphasized. Youth should actively participate in local, community-based educational activities directed towards developing a more sustainable society through non-formal, life-long education. Youth are committed to practical activities and are keen to serve as a driving force for gradual, but active societal transformation. I hope that our message will be well accepted and considered at all levels of society, and that the Decade of Education for Sustainable Development will go far in bringing about a more positive and sustainable society.

EMIL SALIM

Professor, University of Indonesia

Member, Asia-Pacific Forum on Environment and Development, Indonesia

Emil Salim is a Professor at the University of Indonesia and serves on several international and national committees, including the United Nations High Level Advisory Board on Sustainable Development. He chairs the Board of Trustees of the Indonesian Biodiversity Foundation and works with the Indonesian Ecolabelling Institute and the Center for Policy and Implementation Studies. He has chaired the preparatory committee for the World Summit on Sustainable Development and is currently member of "Panel 45" on the Millennium Development Goals and UN Reform chaired by the President of Indonesia. Professor Salim has also been a member of the Supervisory Board of the Aceh Rehabilitation and Reconstruction Agency since 2005. He was a member of the Economic Expert Team of the President of the Republic of Indonesia on Debt and Development issues of the Non-Aligned Movement (1994-1998). Previously he was President of the Governing Council of the UN Environmental Programme (1985-1987), Co-Chair of the World Commission on Forests and Sustainable Development, and member of the Brundtland Commission on Environment and Development (1984-1987).

SUSTAINING THE FUTURE

High growth in the gross world product with widening global inequality in income and rapid deterioration of essential global life supporting systems such as water, climate, land, and biodiversity are fundamental global problems that are caused by basic flaws in the path of past global conventional development. They raise the need for sustainable development in the coming decades. We need a model of development allowing for economic sustainability through poverty alleviation, social sustainability through better quality of human life, and environmental sustainability through enhancing life support ecosystems.

Sustainable development requires a system of life-long learning and education that transforms values and raises knowledge, allowing people to become members of society with a sense of human interdependence and an understanding of how to live in harmony with nature.

The gross world product has grown from US\$ 6.6 trillion, in 1950, to US\$ 44.9 trillion in 2000. The level of global inequality accompanying this growth was demonstrable in 2000 by the fact that 17% of the world's 6.6 billion people were actually receiving 78% of the world's income. Meanwhile, 60% of the world's population were receiving just 6% of the world's income. This high level of growth in the gross world product has been accompanied by a widening global inequality in income. At the same time, we can observe serious deterioration in the essential, life-supporting components of our global environment. This degradation is reflected by water shortages, climate change, land degradation, the shrinking forests and the erosion of biodiversity. These fundamental problems are caused by basic flaws in the path which has been followed by conventional global development in the past.

Flaws visible in conventional global development have included fragmented, sector-centered development, taking place in a market which fails to register social and environmental values. Economic considerations have dominated development and development has been based largely on resource exploitation. "Enlightened private self interest" has been the focus of such development.

The need for sustainable development in the coming decades is therefore obvious. Sustainable development requires that we achieve economic sustainability through poverty alleviation, as well as equity and full employment growth. The social sustainability that can lead to an overall improved quality of life requires that social development promotes social cohesion. Simultaneously, environmental sustainability must be sought through the enhancement of our life-supporting eco-systems.

The paradigms of development are changing, meaning that we must adopt a holistic approach to development. Market corrections must be undertaken so that economic, social and environmental values register on equal terms. The main development system should be one which subordinates the economic system to the eco-system. This requires that development should focus on resource enrichment and on “enlightened public interest” rather than on “enlightened private interest”.

For sustainable development to succeed, we must also enhance people’s intellectual, emotional and resilience quotients. Not only does this require that we achieve an improved overall level of human health, but it also means people must be made aware of their special responsibility to protect nature. Human society needs to enhance its sense of interdependence, its tolerance for social diversity, its social solidarity, and its social cohesion, and its sense of spiritual responsibility for other creatures of nature. We must help to foster values which promote harmonious relationships between human beings, their society, and nature.

The essence of Education for Sustainable Development (ESD) is represented by a transformation of values aimed at harmonious relationships between peoples. ESD requires awareness of the importance of balancing self-interest with the common interest. In addition, it embraces formal education through schools, non-formal or nature-centered education, as well as informal education undertaken through channels such as the media. Finally, ESD requires basic knowledge of the humanities, social sciences and natural sciences; it should foster a total life-long learning process in which all are teachers and students.

Sustainable development requires a system of life-long learning and education that transforms values.

ROB FENWICK

Steering Committee for the Decade of Education
for Sustainable Development, New Zealand

Rob Fenwick is Chairman of the Steering Committee for the Decade of Education for Sustainable Development in New Zealand. He is also chairman of the NZ Business Council for Sustainable Development – a branch of the World BCSD – and chairs the New Zealand Government’s research institute responsible for sustainability - Landcare Research. His business, Living Earth Ltd is New Zealand’s principal commercial compost producer making products from organic waste in Auckland and Wellington. He has close associations with the Maori people in Auckland through economic development initiatives. He is a committed conservationist and a trustee of WWF-New Zealand and was cited as a New Zealander of the Year in 2002. He is a Knight of Justice of the Order of St John.

THE DECADE BUSINESS IN NEW ZEALAND

Kiaora katou o te motu! I would like to share a few of New Zealand's experiences from its first steps in the journey of this Decade of Education for Sustainable Development. There are three main points about this experience which I wish to highlight. First, from my perspective as a businessman, I can vouch for the value of strategic planning in such an endeavor, which should utilize an outcome-based business plan with a bias for action. Second, in New Zealand, the richness of our country's cultural dimension, as exemplified by committed Maori representation has been an essential element in Decade activities thus far. Finally, I believe it is necessary to escape the tyranny of the inaccessible language which can inundate discussions of sustainable development. Instead, we must recognize the potency and appeal of clear and targeted language to promote the Decade's messages.

New Zealanders feel strong emotional associations between economic well-being and their natural environment. The branding of our premium-quality, exported food highlights our green appeal. Also, the new growth in tourism stems largely from the images of New Zealand's breath-taking landscapes and fascinating Maori culture. One might therefore, expect the principles of sustainability to be engrained in our DNA. Unfortunately, New Zealand has the fourth largest per capita eco-footprint in the world.

We believe, however, that the upcoming Decade can shine light in this darkness. We believe this is possible when sustainable development is undertaken with a business-like approach. Strategic planning is essential here. The discipline and accountability which this process requires empowers enthusiastic, multi-faceted committees and gives performance measures to those responsible for its governance. The process has taught us to focus first on what matters most; not to start anything until we are convinced of the impact, at which point we throw all resources at it; and to practice what we preach, which means being sustainable in our own financial, human resources, cultural, and environmental practices. To maximize impact with few resources, we have allocated responsibilities to people in the sectors where they have the most influence.

Earlier, I mentioned the Maori dimension of New Zealand's approach to Education for Sustainable Development (ESD). Maori culture involves a sense of responsibility for the stewardship of *papatuanuku* – the spirit of Mother Earth. Powerful stories, previously transmitted only orally in the Maori language, are increasingly blending into our formal and informal education channels.

Business has much to offer ESD and even more to gain. The growing influence of the Business Council for Sustainable Development, which I chair in New Zealand, emphasizes the importance of commercial successes stemming from sustainability. We can point to stronger staff performance resulting from better work-life balance, cost savings from improved management of raw materials, energy and waste, and growing business in the area of resource recovery.

Doing first what matters most is another way of describing priority analysis, which leads to the question of who is going to hold the most influence at the end of this decade and beyond. It will likely be people in their late twenties and thirties who will be shaping how we view business and politics in the future. Today, these people are teenagers. Generations of parents have tried to change the behavior of teenagers, but have we succeeded? Certainly one group has succeeded, if you want to call it that – those are the marketing executives. By focusing on their audience, they have avoided the sort of inaccessible language which plagues the topic of sustainable development.

New Zealanders feel strong emotional associations between economic well-being and their natural environment.

Perhaps we, the middle aged, suited leaders of academia, business and politics are too ideological and high-minded about the imperatives of sustainable development. We see sustainable development as a "must have" for the planet to survive, but we need to change this spin. In order for sustainable development to achieve near religious status, it needs to infect a country's DNA. To do so, it needs to start out as a "nice to have". At its heart, sustainable development is a collection of "nice to haves". In New Zealand, it is translated into living healthily, living longer, a love of the outdoors and adventure, a celebration of things beautiful, multi-cultural, creative, hip, youthful and sexy.

Does this mean that people seeking what some might view as indulgences may already be practicing sustainable development, even though, heaven forbid, they are not thinking inter-generationally and are living in the moment? Would it not be easier to touch these people, particularly if they were younger than 25, with messages that spin "nice to have" rather than "must have" themes? Business already does this, sometimes with integrity and sometimes simply as green-wash. But as my teenager daughters like to say, "Whatever!" For nothing happens until someone makes a sale, which can only happen when somebody's imagination is ignited.

BOUNTIEM PHISSAMAY

Minister to the Prime Minister's Office, President,
Science Technology and Environment Agency (STEA), Lao PDR

Bountiem PHISSAMAY is Minister to the Prime Minister's Office and President of the Science, Technology and Environment Agency (STEA), Lao PDR. He holds a doctorate in mathematics with applied mathematics as his specialty. Since 2002, he has also been Chairman of the National Science Council, Chairman of the National Council of Universities, a Member of the National Assembly, Chairman of Lao Star (Lao National Satellite project), and President of the Lao Football Federation.

LAO PDR'S RESPONSE TO ENVIRONMENTAL CHALLENGES

Although the Lao PDR is not a big country, we are part of the largest region in the world, the Asia and the Pacific region. This region is home to an extremely rich variety of wildlife and species found nowhere else in the world. On the other hand, the region is also home to over 50% of the world's population. It is a varied region which comprises a diverse range of economies, demographic structures, cultures and geography.

The region has gone through unprecedented changes in economic growth and trade in the last couple of decades. This growth involves great increases in the cross-border use of resources, including energy and other materials, and has led to tremendous impacts on the regional, as well as the global environment. Industrial pollution and the attendant problems of air and water pollution from unchecked urbanization constitute the region's foremost environmental crises. Continued rapid economic growth and industrialization are likely to cause further environmental damage, with the region becoming more degraded, less forested, more polluted and less ecologically diverse in the future.

In 1992, the countries in the Asia and the Pacific region made a commitment, through Agenda 21, to pursue an integrated policy to achieve sustainable development objectives, that is, to mutually reinforcing economic development, social equity, and environmental conservation. Chapter 8 of Agenda 21 called upon countries to develop national sustainable development strategies (NSD strategies). Five years later, the Rio+5 Summit reiterated the need to formulate the NSD strategies. Another five years on, at the World Summit on Sustainable Development (WSSD), the countries of the region committed to the Johannesburg Plan of Implementation (JPOI), which called upon us to formulate NSD strategies and begin their implementation by 2005.

We, the countries of the Asia and the Pacific region have been working hard with the support of organizations such as UNEP, the Asian Development Bank, and others on the development of our NSD strategies. We consider education to be the basic and important tool that links the three pillars of economy, society, and environment together under our sustainable development strategies. Thus, it is a very timely moment for UNESCO, United Nations University, and other agencies to have initiated the development of a regional strategy for the Decade of Education for Sustainable Development in Asia and the Pacific. The formulation of the strategy will benefit our efforts to develop and implement our national sustainable development strategies as committed to the World Summit on Sustainable Development.

VI. TAKING EDUCATION FOR SUSTAINABLE DEVELOPMENT FORWARD

The Lao PDR, with its small population and small economy, is at a particular disadvantage insofar as our capacity to meet the many new environmental challenges is limited. Education is the key to our nation's abilities not only to manage within our own borders, but also to address the increasingly global environmental issues to which we must respond. Hence, the Lao PDR is participating with countries in the Greater Mekong Subregion (GMS) in the GMS Economic Cooperative Programme and is working as an active member of the Association of South East Asian Nations (ASEAN) to see that the formation of a regional strategy for the Decade of Education for Sustainable Development will benefit what we are working for at the subregional level. UNEP will support the ASEAN Secretariat in developing GMS guidelines for a national strategy on sustainable development. The strategy at the regional level should provide very good guidance for the development of a strategy at the subregional level.

We consider education to be the basic and important tool that links the three pillars of the economy, society and environment together under our sustainable development strategies.

VII. ANNEXES

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CONFERENCE BACKGROUND PAPER SUSTAINING THE FUTURE:
GLOBALIZATION AND ESD

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CONFERENCE PROGRAMME

CONFERENCE BACKGROUND PAPER

SUSTAINING THE FUTURE: Globalization and ESD

BACKGROUND

The year 2005 marks the start of the UN Decade of Education for Sustainable Development (DESD). Education for Sustainable Development (ESD) refers to the educational processes by which people develop their capacities to achieve human development, i.e. economic growth, social development, and environmental protection, in an inclusive, equitable and secure manner. The vision of education for sustainable development is a world where everyone has the opportunity to benefit from quality education and learn the values, behavior and lifestyles required for a sustainable future and for positive societal transformation: every world citizen must learn to contribute to a sustainable future for all humankind. Thus, ESD complements other international initiatives with relevance for the education sector, such as the Millennium Development Goal (MDG) process, the Education for All (EFA) movement, and the United Nations Literacy Decade (UNLD), which aim at policies to improve access to quality education, with a focus on the content and purposes of education.

When the United Nations General Assembly passed its resolution to designate the years 2005-2014 as the Decade of Education for Sustainable Development, UNESCO was designated as the lead agency within the UN system. UNESCO has facilitated the development of an International Implementation Scheme (IIS) for the Decade through a broad-based consultative process. In addition to articulating the vision for ESD, the IIS presents a broad framework for all partners to contribute to the Decade.²

This conference is an early opportunity to explore the key interface between ESD and globalization, including the special role that higher education has to play in this regard. The United Nations University initiated the "Ubuntu Alliance," an international group of research and higher education institutions and organizations which decided to join forces at the World Summit on Sustainable Development (Johannesburg, 2002) to promote ESD.³ Within the UNU, the UNU Institute of Advanced Studies (UNU-IAS) has developed a work programme on ESD, in collaboration with UNESCO, that targets both education and policy practitioners. UNU-IAS's work aims to improve the quality of education through the integration of knowledge on sustainability into educational curricula and practices at all levels of education, and to increase the capacity of the public at large, and political decision-makers in particular, to promote sustainable development through an integration of sustainable development components into national development planning and implementation.

OBJECTIVES

Globalization refers to increasing cross-border movements of goods, money, information and ideas as well as people, and to an ensuing interdependency of people and institutions around the world. This interconnectedness changes the living conditions and perspectives of current and future generations. It creates, at one and the same time, both opportunities and challenges. ESD is necessary for learning to address these changes while improving the quality of life in the present without compromising it in the future. It is not just any kind of learning, however, it is learning through quality education, offered through the full range of approaches and modalities.

Thus, globalization, quality education, and sustainable development are intricately linked. Against this background, the conference will explore ways in which globalization impacts on ESD and vice versa. It aims to develop strategies to harness the processes of globalization in a positive way for the implementation of ESD.

STRUCTURE

The conference will be preceded by the Asia and the Pacific Regional Launch of the DESD. The conference will begin with a public symposium in which eminent experts will discuss the relevance and nature of education in the context of ongoing globalization processes. The rest of the conference will consist of workshops on selected key themes, including local and regional actors, higher education, and e-learning initiatives.

² The draft International Implementation Scheme can be accessed from http://portal.unesco.org/education/en/ev.php-URL_ID=27234&URL_DO=DO_TOPIC&URL_SECTION=201.html.

³ See <http://www.ias.unu.edu/research/ubuntu.cfm> for the text of the "Ubuntu Declaration."

CONFERENCE PROGRAMME

Tuesday, 28 June 2005

Venue: Toyoda Auditorium, Nagoya University

9:30-10:30

**ASIA AND THE PACIFIC REGIONAL LAUNCH OF THE DECADE
OF EDUCATION FOR SUSTAINABLE DEVELOPMENT**

Moderator: **Sheldon SHAEFFER** – Director, UNESCO Bangkok

Keynote Speech: **Koichiro MATSUURA**, Director General of UNESCO

Toshio KOJIMA, Vice Minister for Education, Culture, Sports, Science and Technology of Japan

Bountiem PHISSAMAY, Minister to the Prime Minister's Office, President,

Science Technology & Environment Agency (STEA), Lao PDR

Media Clip of UN New York Launch of the Decade

Rob FENWICK, Chairman DESD NZ; Chairman NZ Business Council for Sustainable Development;

Director, Living Earth Ltd., New Zealand

Kartikeya SARABHAI, Director, Center for Environment Education -

Nehru Foundation for Development, India

Atsuko TERAZONO, Alliance of Global Sustainability, Student Community, University of Tokyo

Public Symposium

10:45 -11:30

OPENING REMARKS AND INTRODUCTION

Koichiro MATSUURA, Director-General, UNESCO

Hans VAN GINKEL, Rector, United Nations University

Mutsuyoshi NISHIMURA, Ambassador for Global Environmental Affairs,

Ministry of Foreign Affairs of Japan

Shigeru SUMITANI, Vice Minister for Administration, Ministry of the Environment of Japan

Shin-ichi HIRANO, President, Nagoya University

11:30-13:00

KEYNOTE PRESENTATIONS

Chair: Koichiro MATSUURA, Director General of UNESCO

Mamoru MOHRI, Astronaut and Executive Director/CEO, National Museum
of Emerging Science and Innovation

Lidia R. Arthur BRITO, former Minister of Higher Education,
Science and Technology of Mozambique

Emil SALIM, University of Indonesia,

Member of the United Nations High Level Advisory Board on Sustainable Development

13:00-15:00 **LUNCH**

15:00-18:00

COMMENTARIES AND PANEL DISCUSSION

Chair: Hans VAN GINKEL, Rector, United Nations University

Akito ARIMA, former Minister of Education, Japan

Charles HOPKINS, Professor, York University, Canada; UNESCO
and UNU Chair on Education for Sustainable Development

Kwesi ANDAM, Vice-Chancellor, Kwame Nkrumah University of Science and Technology, Ghana

Hisae NAKANISHI, Dean, Graduate School of International Development, Nagoya University

Carl LINDBERG, Chairman, Swedish National Committee on Education for Sustainable Development;
former Vice Minister of Education, Sweden

Wednesday, 29 June 2005

Workshop

Venue: Plenary Session:

Multi-purpose Auditorium (Room 809),
Graduate School of International. Development, 8F

Working Group 1:

Conference Room 1 (Room 807), Graduate School of International.
Development, 8F

Working Group 2:

Conference Room (Room 702), Integrated Research Building, 7F

Working Group 3:

Open Room (Room 701), Integrated Research Building, 7F

10:00-10:45

OPENING AND INTRODUCTION

OPENING REMARKS:

A.H. ZAKRI, Director, UNU-Institute of Advanced Studies (UNU-IAS)

Hans D'ORVILLE, Director, Bureau of Strategic Planning, UNESCO

Koji NAKANISHI, Director General, ACCU

Workshop structure and aims:

Katsunori SUZUKI, Senior Fellow, UNU-IAS

10:45-11:00 COFFEE BREAK

11:00-13:00

PARALLEL WORKING GROUPS

1. E-LEARNING FOR SUSTAINABLE DEVELOPMENT

Chair: Kimio UNO, Keio University

Rapporteur: Gerard BRADY, UNU

Presenters: John FIEN, Royal Melbourne Institute of Technology

Harald HOLT, Director, Global Virtual University (GVU)

Keith WHEELER, World Conservation Union (IUCN)

Commentators: Brendan BARRETT, Academic Programme Officer, UNU

Shoji KAJITA, school of Information Science, Nagoya University

2. LOCAL AND REGIONAL INITIATIVES ON EDUCATION FOR SUSTAINABLE DEVELOPMENT

Chair: Ryokichi HIRONO, Prof. Emeritus, Seikei University

Rapporteur: Zinaida FADEEVA, UNU-IAS

Presenters: Rietje VAN DAM-MIERAS, Open University of the Netherlands/UNU

Y. BHG. Prof. Dato' Dzulkifli Abdul RAZAK, Vice Chancellor, Universiti Sains Malaysia

Prof. K. C. KOSHY, Director, Pacific Center for Environment and Sustainable Development,
The University of the South Pacific

Commentators: Emmanuel FREMPONG, Dean of Students, Kwame Nkrumah
University of Science and Technology, Ghana

Yoshiko TAKEUCHI Murphy, President, Ehime Global Network and a board member of the Japanese
Commission on the Decade of Education for Sustainable Development (ESD-J)

3. HIGHER EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

Chair: Carl LINDBERG, Chairman, Swedish National Committee on Education for
Sustainable Development; former Vice Minister of Education, Sweden

Rapporteur: Sampreethy AIPANJIGULY, UNU-IAS

Presenters: Goolam MOHAMEDBHAI, President, International Association of Universities (IAU)

Rosalyn MCKEOWN, Director, Center for Geography and Environmental Education, University of Tennessee

Kartikeya V. SARABHAI, Director, Center for Environment Education, India

Commentators: Shuichi NAKAYAMA, Professor Emeritus, Hiroshima University

Rick CLUGSTON, Director, Association of University Leaders for a Sustainable Future

13:00-14:30 **LUNCH BREAK**

14:30-16:00 **PARALLEL WORKING GROUPS (DISCUSSION CONTINUED)**

16:00-16:30 **COFFEE BREAK**

16:30-18:00

PLENARY SESSION

Chair: Hans VAN GINKEL, Rector, UNU

Concluding Session of the Workshop (16:30-17:15)

-Reports of working groups / -Discussion of conclusions

Launch of "Regional Centers of Expertise" on

Education for Sustainable Development (RCEs) - (17:15-18:00)



UNITED NATIONS
UNIVERSITY



UNU/UNESCO
INTERNATIONAL CONFERENCE

Asia-Pacific Regional Launch of the Decade of Education for
Sustainable Development

Globalization and Education for Sustainable Development - Sustaining the Future

28-29 June 2005, Nagoya University



CONFERENCE PROGRAMME

Organized by:

United Nations University (UNU) - United Nations Educational,
Scientific and Cultural Organization (UNESCO)

Co-organized by:

United Nations University – Institute of Advanced Studies (UNU-IAS) Nagoya University
Asia/Pacific Cultural Centre for UNESCO (ACCU)

"Globalization and Education for Sustainable Development" was the subject of an international conference held by the United Nations University (UNU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) at in Nagoya, Japan, from 28 to 29 June 2005. Contributors included: Koichiro Matsuura, Director-General of UNESCO; Hans van Ginkel, UNU Rector; Mamoru Mohri, Astronaut and Executive Director/CEO, National Museum of Emerging Science and Innovation, Japan; Emil Salim, University of Indonesia, Member of the United Nations High Level Advisory Board on Sustainable Development; Lidia R. Arthur Brito, Eduardo Mondlane University, Mozambique; Bantiem Phissamay, President of the Science Technology & Environment Agency (STEA), Lao PDR; Carl Lindberg, Chairman, National Committee on Education for Sustainable Development, Sweden.

"Through ESD, we should acquire a better understanding of the complex interdependence between human needs and the natural environment, between economics and culture, and between the local and the global."

Koichiro MATSUURA, Director-General of UNESCO



United Nations Educational,
Scientific and Cultural Organization
Bureau of Strategic Planning

For further information about UNESCO's activities
related to globalization, please see:
<http://www.unesco.org/bsp/globalization/>

