Tomorrow Today

United Nations
Educational, Scientific and
Cultural Organization

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Foreword

IRINA BOKOVA, DIRECTOR-GENERAL OF UNESCO

Education for sustainable development is born out of a very simple idea: reaching sustainability will require more than legal frameworks, financial resources and green technologies, it also needs us to change the way we think — change that can best be obtained through education.

The international community first recognized the role of education in achieving sustainable development in 1992, when participants at the Earth Summit held in Rio de Janeiro adopted Agenda 21, Chapter 36 of which is devoted to promoting public awareness and training. Since then, these policy ideas have taken shape, and educators around the world are seeking to ensure that their teaching incorporates the principles and values of sustainability.

As the United Nations agency with a mandate for education, UNESCO is uniquely placed to support countries to promote sustainable development through formal and non-formal learning. As leader of the UN Decade of Education for Sustainable Development (DESD, 2005-2014), proclaimed by the UN General Assembly in 2003, the Organization facilitates partnerships with a wide range of players, including youth and media groups; fosters research and the sharing of information and good practices; and provides a framework for monitoring and evaluation. It has also convened major events such as the 2009 UNESCO World Conference on Education for Sustainable Development held in Bonn, Germany.

The publication *Tomorrow Today*, which is being produced in time for the presentation of the DESD mid-Decade report to the UN General Assembly in November 2010, sets out the opportunities and emerging challenges in the area of sustainable development, and identifies innovative means for addressing them. The diverse voices in this book clearly demonstrate that reorienting our education systems in line with the principles of sustainable development is essential for helping learners to understand and act upon such threats as climate change, poverty, food scarcity and the loss of biodiversity.

Building the sustainable world of tomorrow requires concrete action today. This book provides some answers as to how, through education, we can prepare a better future for all.

I thank our partner Tudor Rose and all the contributors who have made *Tomorrow Today* possible.

Image: © UNESCO/Michel Ravassard

Irina Bokova
Director-General of UNESCO

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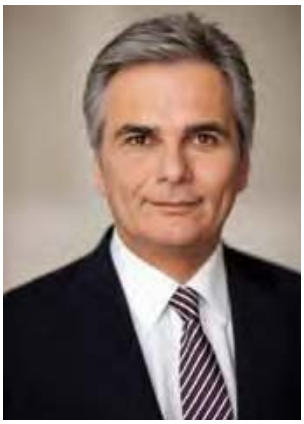
WERNER FAYMANN, THE FEDERAL CHANCELLOR OF AUSTRIA

The UN Decade of Education for Sustainable Development places new methods of teaching and learning at the heart of global policy agendas. It is only possible to combat and reverse non-sustainable trends through widespread change in the awareness of our children, the general public and the main stakeholder groups, including the economic sector. Education for sustainable development (ESD) seeks to support people of all walks of life in planning their future, reflecting on the consequences of their individual actions and finding possible solutions to boost positive transformation. It strengthens their decision-making competence and responsibility as a precondition for social change. Furthermore, it follows the cognitive as well as the affective learning goals that are of particular value for promoting a humanistic perspective of all people in the educational and non-educational contexts.

Austria has been at the forefront of efforts to create the political conditions for making ESD a central issue in the broader education debate. The national strategy for ESD, adopted in 2008, gave rise to a number of highly regarded initiatives. We continue to explore new areas and work on innovative measures to inspire new commitments. The UNESCO publication *Tomorrow Today* helps to nurture an international spirit of knowledge exchange for increasing collective intelligence to advance a holistic, interdisciplinary and quality education. It creates a global strategic landscape that private and public policymakers can use to improve their decision making and understanding. Therefore, I would like to express my appreciation to all whose efforts are behind this publication.



Werner Faymann
The Federal Chancellor of Austria

THE HONOURABLE DIANE MCGIFFORD, CHAIR, COUNCIL OF MINISTERS OF EDUCATION, CANADA

Education and training play a major role in the endeavour to create a sustainable society. Globally, we are facing critical environmental, social and economic challenges, which require new ways of thinking and acting. We need to prepare our students by educating them in the basics of sustainable development and preparing them to take their places as environmentally, socially and economically literate citizens, consumers, workers and leaders.

In Canada, the Council for Ministers of Education Canada, local governments and community organizations, stakeholders from many sectors, and many non-governmental organizations are actively promoting and supporting education for sustainable development (ESD). Provincial and territorial departments of education, universities and colleges including faculties of education, and schools across Canada are incorporating ESD into existing courses, curricula and programming, as well as developing new courses, curricula and learning resources. Moreover, much of this work is being done with partners from outside the formal education sector.

We believe that ESD is setting a direction for education and learning that is based on values, principles and practices that are necessary to respond effectively to current and future challenges.

Diane McGifford
Chair, Council of Ministers of Education, Canada

PROF. DR. ANNETTE SCHAVAN, FEDERAL MINISTER OF EDUCATION AND RESEARCH, GERMANY

Education is the key to progress and development and meaningful, quality education must be a priority worldwide. Every child and adult must have the opportunity to acquire the values, competencies, skills and knowledge that they need in order to shape their own future and the future of their planet actively and responsibly.

Germany therefore wholeheartedly supports the objectives of the UN Decade of Education for Sustainable Development (DESD). In the light of the current dramatic global challenges, the aims of the DESD become more relevant every day. Citizens committed to sustainable development will be diligent custodians of the environment, responsible actors in the business world and passionate promoters of social and global justice. They will be true global citizens.

The Bonn Declaration, adopted unanimously at the UNESCO World Conference on Education for Sustainable Development in Bonn, Germany, states: "Education for Sustainable Development is setting a new direction for education and learning for all. It promotes quality education and is inclusive of all people. It is based on values, principles and practices necessary to respond effectively to current and future challenges." This vision and practice of education remains relevant for the remainder of the DESD and beyond.

Prof. Dr. Annette Schavan
Federal Minister of Education and Research, Germany

TATSUO KAWABATA, MINISTER OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY, JAPAN

The United Nations Decade of Education for Sustainable Development (DESD), proposed by the Japanese government at the World Summit on Sustainable Development held in Johannesburg, South Africa in 2002 and at the 52nd UN General Assembly of the same year, began with the blessing of many countries, and we have now already reached the halfway mark. Thus far, considerable discussion on the necessity, basic concepts and objectives of Education for Sustainable Development (ESD) has taken place in the international community and the importance of passing on ESD to future generations has been widely recognized. Now, however, we are facing our most important challenge of figuring out how countries that are at different stages of development will be able to take part in the latter half of the DESD in order to make it a success.

In this context, Japan is carrying out various forms of assistance for ESD initiatives in cooperation with UNESCO, which is the lead agency for promotion of ESD, and with other UN agencies and Member States. Japan has, in particular, been making annual financial contributions to UNESCO for the expansion and promotion of ESD, and has been supporting various projects for teacher training in Asia and Africa in order to boost understanding of its monitoring and evaluation in the field.

In addition, since the Japanese government believes that it is of vital importance not only to cooperate with international endeavours but also to reinforce ESD initiatives nationally, we are presently considering strategies for the expansion and promotion of ESD. Accordingly, as one effective tool, we propose that the UNESCO Associated Schools, which is an international network of UNESCO schools, be utilized as a base for the promotion of ESD. We believe that under the principles of UNESCO, these schools will be able to connect the individual areas of environmental education, education for international understanding, energy education and world heritage education and, through the construction of an international network, will serve as a driving force for the expansion and promotion of ESD.

Our goal in Japan is to increase the number of UNESCO Associated Schools in the country from just over 200 to 500 by 2014, which is when Japan will host the End-of-Decade Conference of the DESD, and we are aiming to transmit the best practices of these schools to the world. We believe that it is necessary to further expand and promote ESD in the future, not only in Japan, but also throughout the entire world.

Tatsuo Kawabata
Minister of Education, Culture, Sports,
Science and Technology, Japan

MICHELINE CALMY-REY, FEDERAL COUNCILLOR, HEAD OF THE SWISS FEDERAL DEPARTMENT OF FOREIGN AFFAIRS AND MEMBER OF THE UN HIGH-LEVEL PANEL ON GLOBAL SUSTAINABILITY

Sustainable development is a concern that cuts across all levels of society. It is also an opportunity. Taking up the challenge and giving it due priority, the United Nations has not only created worldwide awareness but also formulated international policies upon which Member States have been able to define their own commitments. Sustainable development is a vanguard for all those who, in shared and concerted efforts, are willing to stand up for a more viable and fair society for all. For the last few decades, we have been tackling the issue from a variety of viewpoints, gaining fruitful insights and asserting common values. We now need concrete implementation, new approaches and international cooperation.

In this regard, education is fundamental. Education enables adults to see and address local and global problems as citizens, parents and stakeholders in an economic and political system. Education enables new generations to understand all the interconnections in the world that they will discover in time, to question what seems immutable, and to develop intellectual and critical approaches to life. Education enables people to get their bearings and establish innovative and fruitful relationships with the world around them. Education enables people to make sustainable decisions, for themselves and for the community, today and tomorrow.

"Our task is not to foresee the future, but to enable it," said Antoine de Saint-Exupéry. Education for sustainable development is the most efficient way to demonstrate that we are developing within ourselves the capacity to rise to the occasion.

Micheline Calmy-Rey
Federal Councillor, Head of the Swiss Federal Department of Foreign Affairs and Member of the
UN High-Level Panel on Global Sustainability

JACQUES DIOUF, DIRECTOR-GENERAL, FAO

While rural people are still in the demographic majority in less-developed regions of the world, they are an often-neglected political minority. Although at the global level, the proportion of the population living in urban areas has reached 50 per cent, in the less-developed regions, the 50 per cent level will only be reached just after 2020. These data indicate that while from an overall global demographic perspective, urban people have now equalled the rural population, in less developed regions the percentage and the absolute number of rural people are such that this demographic group cannot be ignored. Between 2010 and 2030, the rural population worldwide will remain almost constant at about 3.4 billion persons.

FAO and UNESCO have consistently supported efforts aimed at providing stronger linkages between food security and education. The food crisis, exacerbated by the financial and economic crisis, has given impetus to a renewed effort of the international community to reduce the impact of these events on poor people and to prevent future emergencies. The Education for Rural People (ERP) Partnership, for which FAO is the UN lead agency, has been considered an essential part of this endeavour. The great majority of the so-called 'hard-to-reach children' are concentrated in rural areas. Giving these children wider access to education is one of the crucial factors for sustainable development.

Jacques Diouf,
Director General, FAO

ACHIM STEINER, EXECUTIVE DIRECTOR, UNITED NATIONS ENVIRONMENT PROGRAMME

The publication of *Tomorrow Today* by UNESCO is a contribution to the ongoing dialogue on integrating principles and practices of sustainable development in all aspects of education and learning — an idea engendered by the UN Decade of Education for Sustainable Development (DESD).

When assessing the multifaceted links between the environment and development it is apparent that the world is a series of inter-connected causes and effects. Debts held by banks in New York may affect the way timber is harvested in Brazil. Subsidies paid to sugar beet farmers in France may affect a farmer's ability to survive in Mauritius. Chemicals used in Germany may affect the health of children in Australia and gold extraction in Africa or Amazonia can lead to mercury contamination of fish far away.

The connections are virtually endless and are no longer just a matter for academic debate. As the world moves towards a more sustainable Green Economy, education will play an even more central role in shaping our values, and equipping us with necessary knowledge and requisite skills to reshape our production processes and change consumption habits.

However advanced new technologies may be, however innovative may be the response of science, and however disposed governments may be to apply them, complete and decisive success in achieving sustainability will only occur if decision makers, governments, business, communities and individuals are convinced of the benefits and opportunities of a healthy, equitable, self-sustaining and abundant world — allowing for the provision of decent jobs and livelihoods within an environment liberated from the risks and threats of climate change, pollution, resource depletion and ecosystem degradation.

This publication can contribute towards this transition by shifting understanding and thus open societies to the possibility of change, in turn leading to the promotion of new actions and behaviours — ultimately leading to a total and comprehensive paradigm change in the way we interact with the natural world.

Achim Steiner
Executive Director, United Nations Environment Programme

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ANNA TIBAIJUKA, EXECUTIVE DIRECTOR, UN-HABITAT

Half of humanity now lives in cities and around one billion urban residents live in slums. The urbanization of poverty is therefore one of the most daunting challenges of the 21st century. Cities offer many opportunities, but urban growth in many developing countries is largely chaotic, non-inclusive and inefficient. Reversal of this trend requires institutions capable of supporting sound governance and regulatory regimes, and of delivering effective public infrastructure and social services.

If cities are to come to terms with rapid levels of urbanization, they require leaders, managers and staff capable of adopting innovative and robust approaches to planning, developing, managing and financing cities for the benefit of all citizens.

Aware of the key role of education in promoting socially and environmentally sustainable cities, as well as its contribution to the realization of the Habitat Agenda goal of adequate shelter for all, UN-HABITAT is working towards improving the quality and range of appropriate educational opportunities on urban issues. This includes development of partnerships with universities, promotion of the values and principles of sustainability in key areas such as water and sanitation as well as climate change, active participation in the inter-agency committee for the United Nations Decade of Education for Sustainable Development (DESD) and its activities, and the raising of public awareness.

UN-HABITAT fully supports *Tomorrow Today*, prepared within the framework and initiative of the DESD. This work bears testimony to the whole of the UN family's quest for a better world. The publication will be useful to UN-HABITAT as a communication tool in our engagement with partners promote education for better and sustainable cities.

Anna Tibaijuka
Executive Director, UN-HABITAT

THORAYA AHMED OBAID, EXECUTIVE DIRECTOR, UNFPA

The United Nations Population Fund (UNFPA) supports countries in their efforts to achieve sustainable development by giving priority attention to population, gender and reproductive health.

Our work is guided by the Programme of Action of the 1994 International Conference on Population and Development (ICPD) and the United Nations Millennium Development Goals. We place special emphasis on advancing sexual and reproductive health with a focus on the needs and rights of men, women and youth, particularly those who are vulnerable and marginalized.

The need for sexual and reproductive health education and services has never been greater. Although recent UNAIDS statistics show HIV prevalence rates declining among youth in many high-prevalence countries, young people aged 15-24 still account for 40 per cent of all new HIV infections in adults. In sub-Saharan Africa, about 70 per cent of infections are among young women.

Comprehensive and age-appropriate sexuality education plays a critical role in HIV prevention. Knowledge about sexual and reproductive health helps young people to protect themselves and reduce risky behaviour. Research also shows that girls who complete secondary school have lower HIV infection rates than girls with lower levels of educational attainment.

By advancing access to education and reproductive health information and services, with a focus on human rights and gender equality, and by supporting the leadership of young people, we can improve prospects for a more just, peaceful and sustainable world.

Thoraya Ahmed Obaid,
Executive Director, UNFPA

KONRAD OSTERWALDER, RECTOR, UNITED NATIONS UNIVERSITY

Caring about sustainable development means accepting responsibility for the well-being of future generations and also of our habitat and our planet. Taking a positive approach to sustainability has to be an integral part of the moral foundation of our actions and our lifestyle. This means that promoting sustainable development must be an important aspect of the educational agenda at all levels. It starts in kindergarten and it goes all the way to the university level and beyond. It basically involves three aspects: the buildup and reinforcement of a basic understanding of the problem of sustainability, an inspection of all aspects of our life under the criterion of sustainability and finally an active search for new methods and techniques to further sustainable development.

The United Nations University (UNU), in particular through the research and teaching activities of two UNU institutes, the UNU Institute of Advanced Studies (UNU-IAS) in Yokohama, and the UNU Institute for Sustainability and Peace (UNU-ISP) in Tokyo, is contributing to the implementation of the UN Decade of Education for Sustainable Development, 2005-2014. The UNU is proud of its ongoing work and collaboration with UNESCO in the area of education for sustainable development, as it is an important and very practical way for the UNU to help ensure a sustainable future for all.

Konrad Osterwalder
Rector, United Nations University

JÁN KUBIŠ, EXECUTIVE SECRETARY, UNECE

Education is a key means for building a sustainable future. Education for sustainable development (ESD) empowers individuals, communities and society as a whole to make informed judgements and choices in favour of sustainable development. The UNECE Strategy for ESD, adopted in 2005, is a policy tool that helps countries to introduce and promote ESD in national formal, non-formal and informal education. It aims to develop policy, regulatory and operational frameworks to support ESD, equipping educators with the necessary competencies, ensuring that adequate tools and materials for ESD are accessible, promoting research on and development of ESD and strengthening regional cooperation on ESD. Since 2005, the UNECE region has made good progress in furthering ESD, including activities such as developing a set of ESD indicators and related tools to measure the effectiveness of ESD implementation and to support countries' self-assessment; developing ESD competencies for policymakers and for teachers; sharing experiences through collection of good practices; developing capacity through workshops and training; and strengthening the use of electronic tools. The region is progressing well to achieve its 2015 target in implementing ESD.

The *Tomorrow Today* initiative provides an excellent opportunity to consolidate the acquired knowledge and practice in ESD across the globe with a view to learning from each other and joining efforts in building a sustainable future locally, regionally and globally.

Ján Kubiš
Executive Secretary, UNECE

JOSETTE SHEERAN, EXECUTIVE DIRECTOR, WORLD FOOD PROGRAMME

No child can learn when they are hungry. Yet tens of millions of children go to school hungry every day. As the lead humanitarian agency in fighting hunger, the World Food Programme (WFP) has made school meals a critical component in its toolbox of hunger solutions. In 2009, WFP reached nearly 22 million children in schools in 65 developing countries.

This single intervention, which can cost as little as 25 cents a day, increases enrolment, keeps girls in school, and improves attention and nutrition. Sufficient nutrition is the foundation for reaching every one of the eight Millennium Development Goals. School meals are often the first step in a nation's food security safety net and WFP has handed over these programmes to 34 nations, most recently to Cape Verde.

With the World Bank Group, the Partnership for Child Development, NEPAD and other partners, WFP is helping countries develop sustainable national school meals programmes which also connect to local agriculture and provide farmers with a new market for their crops.

WFP takes great pride in its commitment to the United Nations Decade of Education for Sustainable Development (DESD). We endorse and are working towards the six goals of Education for All (EFA) by supporting national governments to implement school feeding programmes. With other partners WFP supports complementary activities to raise awareness of health, nutrition and hygiene, promote girls' education, and create school gardens. We also safeguard the environment with projects such as fuel-efficient stoves in schools and water-harvesting.

Josette Sheeran,
Executive Director, World Food Programme

Envisioning, coordinating and implementing the UN Decade of Education for Sustainable Development

Mark Richmond, Director, Division for the Coordination of UN Priorities in Education, Education Sector and Platform Manager, Intersectoral Platform on Education for Sustainable Development, UNESCO

In December 2002, the United Nations General Assembly adopted Resolution 57/254 to put in place the United Nations Decade of Education for Sustainable Development (DESD), spanning 2005 to 2014. The DESD aims to integrate the values, principles and practices inherent in sustainable development into all aspects of learning — in all types, levels and settings of education — to encourage changes in attitudes and conduct which will help to create a more viable and fairer society for all. Hence, it is an instrument of mobilization and advocacy, through which governments, international organizations, civil society, the private sector and local communities around the world can demonstrate their practical commitment to learning to live sustainably. It is a worldwide endeavour aiming to reorient education around the three pillars of sustainable development — the economic, the social and the environmental.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) was designated lead agency for the DESD. The Organization therefore plays a two-fold role in relation to the DESD: on the one hand, it acts as global coordinator for all stakeholders of the DESD while, on the other, as the specialized UN agency dealing with education, it acts as one of numerous implementers of education for sustainable development (ESD) and has developed its own programmes in this field.

UNESCO's vision for ESD

UNESCO's basic vision is of education systems that encourage equity and inclusion, quality learning, flexibility, inter-disciplinarity and innovation. Thinking and practice are too often trapped within disciplinary boundaries, organizational silos and development paradigms. In an attempt to overcome this, ESD aims at shaping a world where education works with methods and contents that encourage learners to question unsustainable development patterns, find innovative solutions to new emerging issues and adapt their lifestyles according to the criteria of sustainability. It is a world where the principles, values and practices of sustainable development find their place in children's schooling, higher education, community-based learning activities and workplace training programmes. In such a world, educators will serve as key change agents to reorient our societies towards sustainability by focusing on participatory learning, critical thinking and reflective practices.

UNESCO believes that ESD is not just for formal schooling but embraces a wide range of learning experiences and settings. It is a dynamic concept that utilizes all aspects of public awareness-raising, education and training to create or enhance an understanding of sustainable development, especially in terms of linking together the issues involved and stimulating changes in conduct. It seeks to develop the knowledge, skills, perspectives and values that will empower learners of all ages to assume responsibility for creating and enjoying a sustainable future.

UNESCO and others have been making the case for ESD as a key dimension of a multifaceted concept of quality education that is linked to citizenship education, human rights education, education for peace and mutual understanding, and education towards respect for cultural diversity as well as biodiversity. Implicit in this is the contribution of education to a democratic approach to addressing the challenges of sustainable development, an approach that emphasizes the empowerment of communities and citizens, the gradual enlargement and deepening of public awareness, and the changing of values, attitudes and behaviours in order to encourage a shift towards more sustainable forms of consumption and production.

Although it might be difficult to fully accomplish, ESD is one of the most exciting educational undertakings of our time. In part, this is because it is a genuinely ambitious educational agenda, with far-reaching ramifications for the relationship between education and society. ESD has real potential to change education to address the most pressing global issues of our world. It is a stimulating and refreshing process because it challenges the very purpose of education. In fact, ESD provides many of the questions and answers about what education should be about and what it should be for in the 21st century. Thus, ESD is not only a key priority *in* education but also *for* education.

The DESD, therefore, has a vital role to play not only in its own right, with its own tasks and responsibilities, but also as a catalyst for stimulating questions that need to be asked about the relevance and purpose of education around the world. The DESD aims to encourage a dynamic and far-reaching reflection on the transformative power of education. It also seeks to engage policy-makers, researchers, practitioners and a range of

Image: © UNESCO, Michel Ravassard

Room I at UNESCO Headquarters

institutions in re-orienting education systems — from pre-school to adult learning, in formal and non-formal settings — in ways that promote equity, innovation and sustainable development.

It is in this context that UNESCO's action as lead agency for the DESD is to be understood.

The role of UNESCO as global coordinator for the DESD: three milestones

UNESCO has been assigned the role of lead agency for the DESD. In this function, it brings together the efforts of the various UN agencies, programmes and organizations related to the DESD. In addition, it serves as a forum for bringing together important stakeholders in the DESD, encourages monitoring and evaluation and shares good ESD practices. Three important milestones exemplify the coordination role of UNESCO in relation to the DESD:

- Development of the International Implementation Scheme (IIS)
- Establishment of the DESD Monitoring and Evaluation Expert Group (MEEG)
- The UNESCO World Conference on Education for Sustainable Development.

When the UN General Assembly proclaimed the DESD in December 2002, little information was available regarding the exact objectives of the DESD, what strategies would be adopted to implement them and which stakeholders were to be involved. Hence, one of UNESCO's first tasks was to develop the International Implementation Scheme (IIS), which sets out a broad framework for all partners to contribute to the DESD. It is a strategic document that summarizes the goals and objectives of the DESD, and its relationship to other key education movements. It emphasizes the importance of partnerships in the eventual success of the DESD and outlines how these might contribute at all levels — community, national, regional and international. The IIS was the result of extensive consultations with United Nations agencies, national governments, civil society organizations and NGOs, experts and specialists. Developing the IIS was an important process in fostering collective ownership at the start of the DESD.

Monitoring and Evaluation (M&E) is one of the seven implementation strategies enshrined in the International Implementation Scheme. Hence, a second major coordination milestone was the establishment in 2007 of a DESD Monitoring and Evaluation Expert Group (MEEG) to advise UNESCO on appropriate monitoring mechanisms for assessing global progress in the implementation of the DESD. A Global Monitoring and Evaluation Framework (GMEF) was developed which elaborates a rationale, identifies methods and provides structures for data collection, analysis and reporting processes for the DESD at the global level. UNESCO is convinced that the M&E process will be one of the most important, distinctive and lasting achievements of the DESD.

The M&E strategy underscores the importance of developing adequate and relevant indicators at all levels — local, national and international — and for each initiative and programme within the framework of the DESD. One main outcome of the M&E process is the *Learning for a Sustainable World* report series published in 2009, in 2011 and in 2015. The 2009 DESD M&E report, *Learning for a Sustainable World: Review of Contexts and Structures for Education for Sustainable Development* addresses the progress achieved and challenges encountered during the first five years in establishing provisions, strategies, mechanisms and contexts that

Image: © German Commission for UNESCO, K. Danetzki

Member States' representatives at the 2009 UNESCO World Conference on ESD

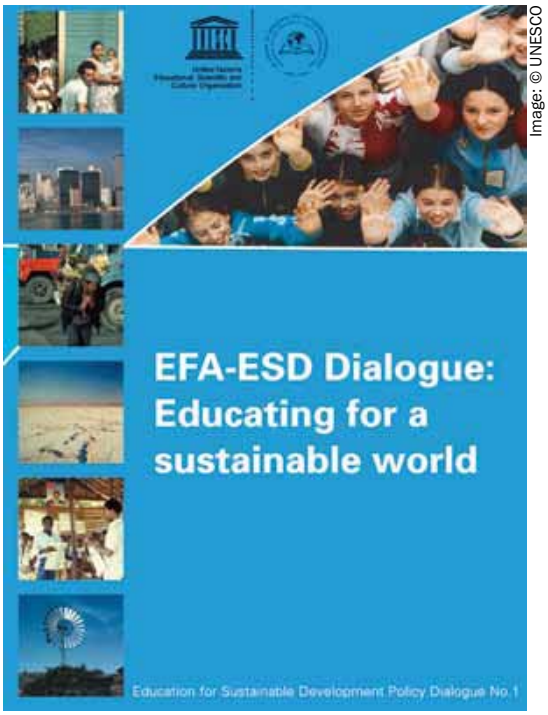


Image: © UNESCO

Cover page of the UNESCO publication EFA-ESD Dialogue

support the development and implementation of ESD. It also indicates ways forward for the remaining half of the DESD.

The third major milestone since the launch of the DESD was the UNESCO World Conference on Education for Sustainable Development, held in 2009 in Bonn, Germany. Organized by UNESCO and the German Federal Ministry of Education and Research, in cooperation with the German Commission for UNESCO, the Bonn Conference provided a platform for dialogue and advocacy on ESD. Around 900 participants, including some 50 ministers and vice-ministers of education, attended the conference. The participants came from all world regions and represented UNESCO Member States, UN agencies, civil society organizations, youth and the private sector.

This event was a pivotal moment at the mid-point of the DESD. It provided all stakeholders with a lively forum in which to exchange ideas and best practices, discuss challenges and consider the direction to take for the remaining years of the DESD. The main outcome of the conference was the Bonn Declaration on ESD, which all conference participants adopted by consensus in the closing plenary. The Bonn Declaration provides a strategic orientation for the second half of the DESD, attesting the importance of ESD in the current world situation.

Moreover, it is worth mentioning that UNESCO convenes several ad hoc groups to participate in the implementation of the DESD, including the UN Inter-Agency Committee for the DESD (IAC), the DESD High-Level Group and the DESD Reference Group. The IAC is a forum of UN agencies for open-ended collaboration towards the effective implementation of the DESD. The IAC promotes the role of ESD and its implications for all forms of international initiatives, such as the Millennium Development Goals (MDGs). It brings together 17 UN agencies committed to achieving the DESD goals: UNESCO, FAO, ILO, UNAIDS, UNCCD, UNDP, UNEP, UNFCCC, UNFPA, UN-HABITAT, UNHCR, UNICEF, UNU, WFP, WHO, the World Bank and WTO.

The role of UNESCO as implementer of the DESD

Education is one of UNESCO's principal fields of activity. Since its creation in 1945, the organization has worked to improve education worldwide, believing it to be key to social and economic development. The organization aims to help build a sustainable world in which societies value knowledge, promote peace, celebrate diversity and defend human rights, achieving these goals by providing quality Education for All (EFA). Hence, UNESCO's mandate makes the organization not only a natural global coordinator but also an important implementer of ESD.

Strategy for the second half of the DESD

Taking into consideration the Bonn Declaration, the 2009 DESD Monitoring and Evaluation Report, and the context of climate change negotiations and financial crisis as well as comments gathered in several consultation rounds, UNESCO has developed its own strategy for the second half of the DESD. During the 2010-2015 period, UNESCO intends to focus its efforts on the following four key areas of strategic action:

- Enhancing synergies with different education and development initiatives (EFA, MDGs, United Nations Literacy Decade (UNLD), EDUCAIDS, Hyogo Framework of Action, etc.) and strengthening partnerships among ESD stakeholders

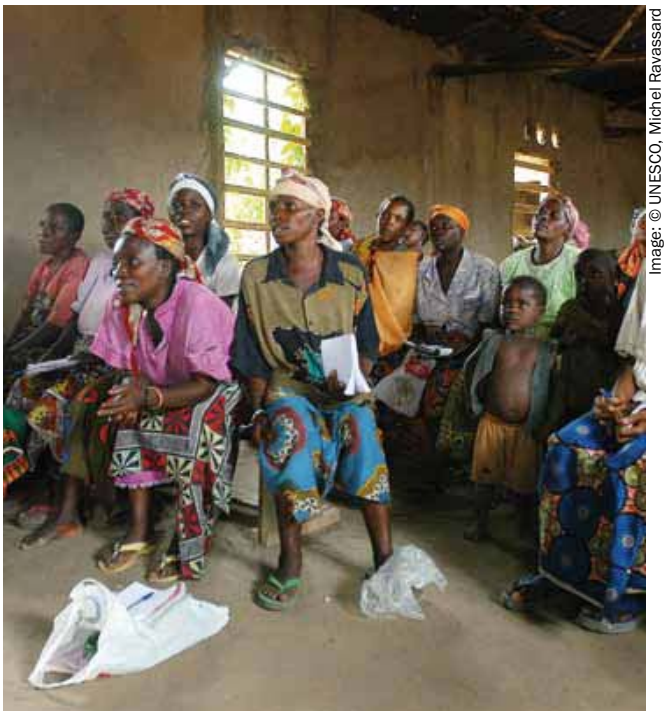


Image: © UNESCO, Michel Ravassard

UNESCO Literacy Programme in Buterere, Burundi

- Developing and strengthening capacities for ESD
- Building, sharing and applying ESD-related knowledge
- Advocating for ESD, and increasing awareness and understanding of sustainability.

Within this framework, UNESCO conducts major initiatives to implement ESD through the programme sectors of the organization. For instance, because the education of teachers and educators occupies a central position in any implementation strategy for ESD, UNESCO targets teacher educators as key agents of change. Hence, effective implementation of the DESD requires engaging the world's teaching workforce (made up of over 70 million teachers and countless numbers of non-formal educators in professional development) to learn the pedagogy, content, values and good practices associated with ESD.

Following UNESCO's continuous and long-term work with the UNESCO Chair on Re-orienting Teacher Education to Address Sustainability (York University, Canada), a growing number of teacher education institutions are integrating ESD principles into their education and training practices. Efforts have been reinforced in Africa in particular through the Teacher Training Initiative for Sub-Saharan Africa (TTISSA) to ensure that ESD is infused into curricula and classroom practice across the continent. UNESCO's work on ESD-related teacher education includes an international symposium for representatives from teacher education institutions which was held at UNESCO in spring 2010. UNESCO is also conducting eight ESD capacity-building activities directly implemented by the organization's field offices in countries located in all major regions.

UNESCO's educational response to climate change is another key programme of the organization within the framework of the DESD. UNESCO's flagship initiative on climate change education will help young people understand and address the impact of global warming today, while also encouraging the changes in attitudes and behaviour needed to place our world on a more sustainable development path.

The priority objectives of the initiative are to strengthen the capacity of Member States, encourage and enhance innovative teaching approaches and raise awareness about climate change, in addition to enhancing non-formal education programmes through media, networking and partnerships.

UNESCO also seeks to support Member States and other stakeholders in addressing global sustainable development challenges at regional, national and global level through ESD. In addition to its initiatives in the education sector, UNESCO also furthers the aims of the DESD in its other fields of competence. For instance, it promotes cultural and linguistic diversity and facilitates the integration of indigenous learning systems and knowledge in formal and informal education for indigenous peoples, a process that includes teaching and learning the history, traditions, culture, rights, spirituality and world views of indigenous peoples and their ways of life. Cultural mapping is also promoted to discover and promote locally grounded concepts and practices of education for sustainable development. Projects also target the private sector to broaden its engagement in educational initiatives in relation to TVET and ESD, especially in developing countries, countries in transition and those in a post-conflict or post-disaster situation.

Ensuring sustainability after the DESD

The task of the DESD is to make a difference in a relatively short time by raising the profile of ESD, galvanizing enhanced action, and mobilizing partnerships. Five years after it began, the most important challenge of the DESD is to keep the momentum alive and to translate commitments into tangible actions and results at the national level.

In this complex enterprise, Member States have to be in the driver's seat. While UNESCO's role as implementer is important, it must be remembered that the DESD is a commitment that will be realized primarily by Member States. Hence, under the coordination of UNESCO, main actions will have to be taken at the national level by relevant DESD partners, led by governments.

In the lead-up to the end of the DESD, it will be crucial for ESD stakeholders and UNESCO to work together towards establishing structures for ESD that will survive the DESD in order to ensure that education will continue to contribute to achieving sustainability beyond 2014. The end-of-Decade conference, to be held in Japan in 2014, will provide an important final milestone in this regard. Until then, UNESCO will work tirelessly to ensure that the principles of sustainable development are progressively integrated into all contexts and settings of education. While the relevance of ESD to current sustainability challenges is obvious, UNESCO believes that its most important and long-lasting contribution will be the positive impact on teaching/learning processes and pedagogical practices and the way we understand the purpose of education around the world.

From Tbilisi to Bonn: an important journey in the historical context of ESD

Charles Hopkins, UNESCO and United Nations University Chairs in ESD, York University, Toronto, Canada

It is no easy feat to do justice to the many and complex sources that have contributed to the formation and nurturing of education for sustainable development (ESD).

Any civilization that has survived the test of time has somehow mastered a systemic way to embed ecological understanding into its cultural and economic DNA. The world's 'successful' cultures from a longevity perspective (largely its indigenous and traditional cultures) have sustained themselves for thousands of years by remaining within their ecological limits. Those cultures that have ignored the importance of preparing their next generation with this wisdom have become ghostly indicators of cultural ineptitude. Their only remaining purpose is to be a warning for those future generations that are wise enough to understand these indicators and to heed them. Hence, the need to engage the world's education, public awareness and training systems has been unanimously recognized by those leaders who want informed change and overall lasting development.

The historical context of the journey from Tbilisi to Bonn should not ignore the parallel processes within the worlds of formal and non-formal education and training. The emergence of corporate social responsibility in the private sector as well as the ability of popular culture to address sustainability issues in engaging fashion are of equally tremendous importance. The emergence of thousands of new NGOs and the ongoing contribution of the stalwart pillars of society such as religion, justice, healthcare etc. also are intertwined with the world of ESD and deserve their own recognition.

The growth of ESD

The emergence of education for sustainable development is largely attributable to the Agenda 21 work programme of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. This programme called for action on 40 different fronts, grouped into four distinct groupings:

- Economic and social issues
- Environmental issues
- Major groups to be targeted for engagement
- Means of implementation.

This last grouping was addressed in Chapter 36, which specifically spoke of the need for engaging education systems and public awareness opportunities and identified the need for sustainability-oriented training in all sectors. The need for ESD was also mentioned in Agenda 21's other chapters and in the work programmes of all the major UN conferences of the 1990s. ESD was unanimously accepted as a crucial element of the sustainability agenda and it seemed logical that the world's education systems would take this on as a key piece of the global implementation plan. This was not to be the easy task that the leaders anticipated.

Those who drafted the ESD chapter between 1987 and 1992 were heavily influenced by their own backgrounds and by other events during this period. One of these was the emergence of environmental education (EE) roughly ten years earlier, as described in the Tbilisi Declaration in 1977. The majority of the drafters were aware of EE and many were actually involved in the Tbilisi process.

However, they were also very aware of the Jomtien Declaration of 1990, which recognized that approximately 120 million children had no opportunity for education of any kind, let alone environmental education. This was more than all the school age children in Europe and the USA combined. Without education there would be no development at all, let alone sustainable development. Jomtien called for a concerted programme known today as Education for All (EFA). Hence the first thrust of ESD called for access to quality basic education. This was the most prominent distinguishing feature of ESD and has eventually led to its wider acceptance in the formal education community.

There was also an awareness of the limited influence within formal education of additional topics or 'adjectival'[1] educations as John Smyth, one of the drafters, called them. The final draft of Agenda 21 pointed out that we should learn from EE and that nations should engage education in its entirety, implying that the addition of another adjectival was unnecessary. The drafters were also aware of the many existing adjectivals that would be able to contribute and refrained from simply implying that the solution would be an enhanced EE programme.

The forty chapters of Agenda 21 were distributed amongst the various UN agencies for leadership and monitoring. UNESCO was the UN agency that was given the responsibility for moving Chapter 36 forward but not a single nation volunteered additional funding to assist. Staff and budgets had to be found within the existing UNESCO funding, which was already stretched due to the withdrawal of the UK and USA. To make matters worse, in many countries, sustainability was largely administered by environment ministries. For the most part, ministries of education did not view

Image: Lyle Benko

Mid-Decade Assembly at Bonn

ESD as their issue. Also the prospect of comprehensively reorienting existing education systems that were largely being hampered by budgetary restrictions from the recession of the early 1990s proved a major deterrent for ministries, both in the developed and developing worlds.

The formal education sector was slow to react and in the early days of the 1990s, it was the energy and help of the adjectival educations that largely nurtured and developed ESD. It was EE, development education, citizenship education, global education, peace education and a host of other 'adjectivals' oriented to social issues that kept ESD growing and maturing. This assistance continues today with the emergence of green economics, ecological economics and climate change education etc.

Despite the hesitation of the formal education systems, the need for ESD grew. By 1996, the UN Commission on Sustainable Development (UN CSD) identified ESD as one of the four main priorities for the UN system's sustainability programme and called for action in this regard throughout the UN system. The Commission specifically requested UNESCO to develop guidelines for the reorienting of teacher education to address sustainability.

Slowly, ESD developed in the academic world. The late 1990s saw academic journals publishing ESD research and opinion pieces. UNESCO did its best to maintain the support of the crucial adjectival educations but also to slowly raise the profile of ESD within formal education. By 1996 the four main thrusts of ESD (i.e. access to basic education, reorienting existing education from that which focused solely on development, public awareness raising and training) were becoming better understood. Many ministries of education saw the connection to access to basic education largely as an issue in developing countries but also recognized the need to address 'quality' from the perspective of the large numbers of under-educated people in the developed world. Slowly the first thrust expanded from simple access to retention to address the high dropout rates in all countries.

The idea of access to quality education led to discussions regarding the very purpose of education and the emergence of the Delors Report titled 'Learning: the treasure within'. Eventually the discussions around EFA enlarged to ask What education for all? In the north, the questions around the first thrust regarding quality education finally led to the engagement of formal education, as these were legitimate questions that ministries had to answer and for which they could be formally held responsible. Ministry officials could comprehend quality whereas they did not understand ESD as yet.

The first attempt to carry out the UN CSD's request to develop guidelines for reorienting the world's teacher education systems occurred as a side meeting at the twentieth anniversary of Tbilisi in Thessaloniki, Greece in 1997. This resulted in the formation of the first UNESCO Chair in ESD. The Chair was tasked with the development of these guidelines and it was within this process, which engaged teacher education institutions (TEI) from over 25 countries worldwide, that serious inroads were made to engage the formal disciplines

including mathematics, language arts, history and geography. These guidelines were developed based on actual research and implementation undertaken in the various institutions. The guidelines were one of the first publications in the UN Decade of Education for Sustainable Development (DESD). The TEI programme has expanded from pure research to actual implementation and has networks in over 70 countries.

However, the UN itself, in declaring 2005 to 2014 the DESD, added much needed weight to ESD. An additional ESD-dedicated staff complement was established within UNESCO and Japan contributed additional budgetary funds. Now Sweden has come forward with ESD help and other countries are assisting with ESD-related meetings on topics such as climate change education. The concept of ESD as a serious matter for ministers of education grew. It was at times a stand-alone item and an International Implementation Strategy was developed. Within UNESCO it was also linked to other discussions such as quality education, the UN Literacy Decade and EFA.

Most DESD activities remain the responsibility of individual nations; however, interest within UNESCO and other UN agencies has risen dramatically. The United Nations University programme of Regional Centres of Expertise and the work of UNEP regarding Higher Education in Africa are but two examples of the contribution to ESD by other UN agencies. Countries such as Sweden have held international ESD conferences and ensured the participation of developing countries. Even school systems and ministries have held DESD events and the logo is widely seen.

The DESD has also nurtured the engagement of formal education experts to address related issues such as teacher competencies for ESD, an ESD research platform, indicators of success and the role of ICT. Additional ESD Chairs have been added to address issues such as higher education, early childhood care and education and social learning. Outside the Paris offices, the UNESCO field offices have contributed to regional and national events and projects. In the historical context, the DESD has been a major event in the road from Tbilisi to Bonn.

The lessons from Bonn

The midway point of the DESD proved to be another vital step in the emergence of ESD. Thanks largely to the government of Germany and the support of Sweden and Japan, UNESCO held a mid-decade review in Bonn in 2009. The purpose was to find answers to three major questions:

- What has been accomplished to date?
- What have we learned?
- What priorities still need to be accomplished?

One of the key outcomes was The Bonn Declaration, a document composed by five elected senior education representatives from each of the six UN regions. The combined committee of 30 worked for three days considering each of the three major questions and emerged with some key priorities for the way forward. The Declaration was accepted unanimously by the nearly 1,000 delegates at Bonn and adopted later in 2009 by the UNESCO General Conference.

The Bonn Declaration achieved much, but perhaps the overarching understanding of the concept and importance of ESD extending into all regions of the world will be its greatest contribution. Many senior education officials spoke of the lack of clarity of the concept of ESD when they arrived but when they understood that ESD was the outcome of the education system itself, the progress really began. As a result, the Declaration stresses the need for senior education leaders to receive much needed professional development and coaching in ESD. The Declaration calls for the engagement of teacher education institutions and collaboration between ministry officials, TEI and local school jurisdictions to reorient existing schools. Participants realized that while individual schools and school leaders are essential, the overarching policies regarding what is taught, what is examined and reported and what kind of buildings are erected, etc. are also crucial. There is much to learn.

Informed choices for the future

This learning continues on many fronts. Following on from the idea of embedding ecological wisdom in our cultural DNA, it is important that we continue to learn and understand how to do this. The framework that ESD provides to reorient education systems (which have largely been designed to promote widespread development) towards the new vision of sustainable development is tremendously useful. From embracing a newly emerging vision to embedding it in our cultural DNA is a huge but necessary leap. It means pursuing the reorienting of formal education, not only from a content perspective but also modelling sustainability in our teaching praxis and valuing it in both our funding priorities and assessment/reporting schemes.

No historical context is complete without a glimpse into the future. If we are to truly learn from EE and the other adjectivals as recommended in Chapter 36, we must learn to comprehend the complexity and priority of the forms of ESD that must eventually develop. The great emerging issues of climate change, biodiversity collapse and social/cultural clash are complex and will require the collaboration of the social as well as the natural and physical sciences if we are to comprehend and to act upon them. However complex, ESD is a priority that we need to address. We must look at how our societies are shaped and then figure out a way to empower societies worldwide to make informed choices as to what is needed and how reorientation is to take place. ESD did not, does not and should not call for one world view or ideology.

As well as understanding what ESD is, we must also be clear regarding what to call it. We have learned from EE of the problems of the limitations of priority of adjectivals within the formal education system. We have learned not to talk about sustainability education if we want to engage the whole education system. We have also learned that world leaders require informed engagement and action from their institutions. Hence the term education 'for' — rather than education 'about' or education 'and' — sustainable development.

Those who considered and wrote Chapter 36 over those four years saw the need to engage the world's education, awareness and training systems as tools to help cultures achieve their sustainability aspirations. ESD represents a learning and sharing process rather than an indoctrination process. It is a process of learning with purpose and it should include a critical understanding of the limitations of sustainability and its anthropocentric goals.

Learning from each other

Monika Linn, Team Leader and Angela Sochirca, Environmental Affairs Officer, Environment for Europe and Sustainable Development Team, Environment, Housing and Land Management Division, United Nations Economic Commission for Europe

There is widespread concern that our current model of development is unsustainable and that our education systems reflect and support this model to a large extent. We are faced with a dual challenge of (a) recasting our model of development while (b) preparing our society for survival in a rapidly changing world. Education alone cannot solve the world's problems, but is an essential prerequisite for empowering society to make the transition to a sustainable future. Education for sustainable development (ESD) is crucial for good governance, informed public decision-making and the promotion of democracy. It plays a fundamental role in overcoming social, economic and environmental challenges. The United Nations Decade of Education for Sustainable Development (DESD) illustrates the importance of education in achieving sustainable development.

As an important regional contribution to the decade, member States of the United Nations Economic Commission for Europe (UNECE) adopted the UNECE Strategy for Education for Sustainable Development in 2005, thereby placing ESD high on the political agenda. UNECE brings together 56 countries located in the European Union (EU), non-EU western and eastern Europe, south-east Europe and Commonwealth of Independent States, and North America. All these countries communicate and cooperate under the aegis of the UNECE on economic and sectoral issues.

Image: UNECE

Nursery and primary schoolchildren should get special attention from educators as they are tomorrow's decision makers

The strategy was prepared through a participatory process involving all relevant actors, with the aim of encouraging UNECE member States to develop and integrate ESD into their formal education systems, as well as into non-formal and informal education. The strategy also suggests establishing a partnership mechanism between different ministries and agencies to coordinate the implementation.

The work taking place under the strategy involves pursuing a set of related goals: ensuring that policies support ESD, promoting sustainable development through all forms of learning, equipping the education sector with the competences to engage in ESD, developing ESD tools and materials, promoting research and development of ESD and strengthening cooperation on ESD in the UNECE region.

The strategy is the regional implementation pillar of the United Nations DESD and is being implemented in close cooperation with UNESCO.

The implementation of the strategy is a continuous, long-term process, with three major phases:

I (until 2007) — countries have identified what they are already doing that fits within the framework of the strategy, as well as priorities for further action required to implement the strategy

II (until 2010) — the implementation of the strategy should be well under way. Countries should review progress made in the implementation of their national/state strategies and revise them, if necessary

III (until 2015 and beyond) — countries should have made considerable progress in implementing ESD.

ESD is still developing as a broad concept encompassing interrelated environmental, economic and social issues. Although achieving ESD is strongly linked to the national and local priorities, needs and traditions, international exchange is crucial. In this regard, a Steering Committee on ESD was established to decide on the strategy's implementation and review its progress in the UNECE region. It also provides a forum for exchanging experiences, in particular at policy and institutional

levels, and is an efficient mechanism for ESD implementation. It is comprised of representatives from the education and environment sectors, as well as key ESD stakeholders participating as observers. Participating countries recognize the importance of learning from each other.

A number of activities have been carried out since 2005. One important achievement is the development of a reporting mechanism, including a set of indicators, as an innovative tool to support the monitoring and the assessment of progress in implementing the strategy. The first pilot reporting exercise was carried out on a voluntary basis, and 36 out of 55 participating member States have submitted their National Implementation Reports. On the basis of these reports, a first review on progress in ESD in the UNECE region was carried out in 2007. The second mandatory reporting exercise is currently being carried out, and a third one will follow in 2015. In addition, a guidance for reporting was developed to facilitate monitoring and assessment. These tools and materials have been compiled in a publication, which can be received upon request from the UNECE secretariat.[1]

Another important achievement is a collection of good practices in ESD in the UNECE region.[2] This joint UNECE and UNESCO endeavour resulted in the first publication of a wide range of good practices to promote ESD in formal, non-formal and informal education. Also, a collection of good practices — addressing sustainable consumption, production and transportation through ESD[3] — served as a practical contribution to the fourth UNECE Regional Implementation Forum for Sustainable Development in December 2009. These offer a wealth of experience and could be a key tool in promoting ESD in the region and worldwide during the next phase of the strategy's implementation.

The culminating event in the implementation of phase I of the strategy was a joint high-level segment on ESD held during the Sixth "Environment for Europe" Ministerial Conference, in Belgrade in 2007. This event was attended by ministers and high-level officials from both the education and the environment sectors. This event was an encouraging sign of integration with other sectors, as well as of ways to cooperate and make sustainable development a reality. The ministers considered the achievements, lessons learned, challenges and the way ahead. They adopted a joint statement on ESD, providing commitment to further accomplishment of the strategy throughout its implementation phases and beyond 2015.

Image: UNECE

Education is essential for a sustainable future

Overall, the conclusion is that phase I of the implementation of the ESD strategy has been successfully implemented. The close and effective joint work between UNECE and UNESCO, especially in the area of monitoring progress, has been highly appreciated by member States.

The UNECE region has a good base for implementing ESD. Most countries in the UNECE region have education systems with skilled educators, provide access to basic education, grant equal rights to education for all, and have achieved high levels of literacy and scientific knowledge. But many challenges still need to be met to implement ESD effectively. A key challenge is to make the current education systems flexible enough to support the interdisciplinary nature of ESD. Civil society needs to be more involved and institutional and material resources need to be mobilized. Other challenges are the absence of an agreed definition for ESD, confusion about understanding the difference between environmental education and ESD, institutional, legislative and policy frameworks requiring adaptation to the needs of ESD, and the lack of ESD teaching tools, competences and research.

The first regional progress report on ESD[4] concluded that most countries were committed to establishing the policies and institutional and administrative structures. In particular, the countries of eastern Europe, Caucasus and central Asia had made evident progress. The countries of south-eastern Europe face a number of challenges, as many were still taking the prerequisite measures to support ESD. Other countries had progressed significantly. The report also showed that a decentralized governing structure was not an obstacle, and that countries with a federal structure had made good progress.

The report comprises detailed findings and highlights the key role of educators. Major challenges include: giving special attention to those in nursery or primary school today, who will become tomorrow's decision makers; building a stronger partnership between authorities and stakeholders; developing competences in ESD; building the capacity of decision makers and other stakeholders; a more integrative conceptualization of sustainable development to allow for socio-economic perspectives in ESD; development of adequate ESD materials for all levels; enhancing the use of indigenous and other traditional and local knowledge; and making sustainability attractive not only to certain groups, but to society as a whole. In a global context, the problems

Image: UNECE

The Advancing Sustainable Consumption, Production and Transportation through Education for Sustainable Development event discussed policies and practice

Image: UNECE

The Sixth "Environment for Europe" Ministerial Conference, was held in Belgrade in 2007

posed by climate change are a leading example of where ESD can be applied to daily life, as climate change affects everyone. ESD offers an essential way to shape knowledge and attitudes, and hence can help address these problems.

The availability of a structured plan of action at national level is a prerequisite for successful implementation; hence, the development of National Action Plans for ESD is a priority for member states.

ESD implementation should focus not only on the further strengthening of policy and institutional mechanisms and tools, but also on developing competences, content, teaching tools and materials. A better conceptualization is needed to help integrate sustainable development with the education environment. This could only be achieved with the promotion of stronger multi-stakeholder partnerships with both the education and environment sectors.

ESD should be promoted through capacity-building, disseminating of good practices and exchanging positive experiences. Partnerships with the private sector, in particular with local businesses, should be further enhanced. Stronger links with economic issues, including exploring economic incentives and 'greening' procurement, should be promoted. More attention should be given to raising awareness of the potential contribution of indigenous and other traditional and local knowledge with respect to sustainability.

Orienting education towards ESD requires a corresponding shift in the competences of educators themselves. Some of these competences are already recognized, while others will need an innovative approach. Hopefully, this new combination of competences will provide the necessary educational setting for effective ESD to emerge. The UNECE Strategy for ESD calls specifically for the development of educators' competences to engage in ESD. The joint session on ESD at the Belgrade Ministerial Conference recognized educators' competence as a frequent bottleneck regarding improving the quality of education and agreed that developing competences in ESD should be a priority. The first reporting exercise clearly identified the need to further define the nature of ESD competences and the ways these might be developed. Furthermore, an enabling policy environment for this work needs to be supported and applied in each member state, and made a priority in the region's ESD activities. The Steering Committee has established an expert group to work on developing a range of core competences in ESD for educators and general recommendations for policymakers. The expert group will present the results of its work to the next session of the Steering Committee in April 2011.

The strategy is now at the end of its second phase of implementation and a review of the progress made is being carried out to be presented to the Steering Committee in April 2011. As of 2011, the strategy will enter its third phase of implementation, which will focus on furthering ESD implementation through needs-driven activities oriented towards responding to country-specific challenges, including promoting competences in ESD and building the national capacity, as well as exchanging good practices, with a view to assisting countries to achieve considerable progress in embracing ESD by the end of 2015.

ESD has gained in prominence in recent years and many organizations and institutions are carrying out activities related to ESD. It is therefore very important to enhance cooperation and coordination between all ESD stakeholders so as to achieve mutual benefits and synergies and jointly advance ESD. In this respect, a coordination mechanism has been established under the auspices of the Steering Committee, bringing together the ESD stakeholders active in the region with a view to coordinate ongoing and planned activities.

To conclude, there is no stronger catalyst to achieving sustainable development than the good will and active contribution of citizens. The knowledge and awareness that ESD promotes will help change people's mindsets, and in so doing will enable us to make this world safer, healthier and more prosperous.

For our common future: education for sustainable development

Hans van Ginkel, Faculty of Geosciences, University of Utrecht, The Netherlands

Education for sustainable development (ESD) seeks to transform all education in such a manner that present and future generations will be better prepared to actively contribute to the sustainable development of their own societies as well as the world community at large.

ESD focuses all education on the notion of sustainable development, which has been defined by the Brundtland Commission as "development which meets the needs of the present, without compromising the ability of future generations to meet their own needs".

Education for all

Within the UN system, the concept of sustainable development has been further developed to refer to sustainable human development. The introduction of the 'human dimension' places human development at the forefront of all development activities of a region, country or continent. In line with this view, the UN General Assembly in 1986 adopted a 'Declaration on the Right of Development'[1], stating that the human person is the central subject of development, and called upon Member States: 'to ensure access to the basic resources, education, health services, food, housing, employment and the distribution of income'[2]. Quality education for all is essential to achieve a better future for all humankind and ESD gives such education proper meaning and orientation.

Our living planet

The world is becoming ever more globalized and knowledge-based, while society is becoming more complex and heterogeneous, consisting of individuals characterized by intriguing sets of multiple identities. Our impact on our living planet is enormous, and all the Earth's life support systems are under severe threat — often, human activity is the root cause of environmental disasters. The former UN Secretary General, Kofi Annan, in his 1998 Annual Report[3], stated that environmental risks and disasters, rather than war and conflict, were the main cause of human insecurity and that many of these disasters (which include climate change, soil pollution, forest fires, falling groundwater tables and infectious diseases) might best be called 'unnatural'.

Challenges are often also opportunities and most changes can be both for better and for worse. While international terrorism can strike over a great distance, good can also be done from afar. This is often demonstrated with massive aid-programs after major disasters, such as the tsunami in the Indian Ocean, or the earthquake in Haiti.

We can no longer ignore the links between globalization, trade, poverty, development and the environment. This is where education comes in, raising awareness of our individual responsibilities to contribute, to make responsible choices, and to respect other people, nature and diversity.

The UN Decade of Education for Sustainable Development

The decision to establish a Decade on Education for Sustainable Development (DESD) followed many initiatives that emphasized the importance of education in achieving sustainable development. In particular the Earth Summit, held in Rio de Janeiro in 1992, recognized the critical role of education in achieving a sustainable future for all humankind. Chapter 36 of Agenda 21 specifically addresses re-orienting education towards sustainable development, and encompasses formal, non-formal and informal education, from basic, primary education to vocational and higher education, as well as key issues related to ESD.

The overall goal of the DESD is to integrate the principles, values and practices of sustainable development into all aspects of education and learning. This educational effort is expected to create a more sustainable future in terms of environmental integrity, economic viability and a just society for present and future generations. ESD, understood in this way, should be given integrated attention in all sectors and at all levels of education in relation to relevant existing subjects. All teachers in mathematics, physics, chemistry, biology, geography, social science, economics, law, history and literature should be involved, as well as those in basic/primary education. In this way, ESD gives orientation and meaning to quality education for all. It will, however, be a major challenge to develop the curricula and courses needed and to regularly update these, informing teacher training and re-training in timely and effective ways. As environment and development differ from place to place, posing different questions and challenges, but also different opportunities, it is important that ESD clearly reflects relevant, place-specific issues.

Respect as the basis for ESD

UNESCO has identified respect as the founding value for ESD — respect for others, for present and future generations, and for planet Earth. ESD seeks to encourage new behaviours and practices to secure our common future. The DESD aims at changing the approach to education to ensure that in the future it

will integrate better the principles, values and practices of sustainable development. It seeks to break down traditional educational schemes and promotes:

- Interdisciplinary and holistic learning rather than subject-based learning
- Values-based learning
- Critical thinking rather than memorizing
- Multi-method approaches: word, art, drama, debate, etc.
- Participatory decision-making
- Locally rather than nationally relevant information.

UNESCO, through its International Implementation Scheme (IIS), has broken down the goals of the DESD into four key objectives:

- Facilitating networking and collaboration among stakeholders in ESD
- Fostering greater quality of teaching and learning of environmental topics
- Supporting countries in achieving the Millennium Development Goals through ESD efforts
- Providing countries with new opportunities and tools to reform education.

So far, the results of the DESD, more than halfway into the Decade, differ from country to country. In particular, Sweden and Japan have made special efforts. Sweden has made inclusion of ESD elements obligatory at all levels of education, including higher education. Japan has included support for the formation of Regional Centres of Expertise on Education for Sustainable Development (RCEs), as initiated by the United Nations University (UNU) and implemented by the Ubuntu Alliance, in its national strategy for the implementation of the DESD.

International NGOs, such as IUCN and the Earth Charter, are playing an increasingly active role, as are institutions such as the Centre for Environment Education (Ahmedabad, India) and universities such as Lueneburg in Germany, Tongji in China and the Universiti Sains in Malaysia. Many specialized networks on ESD have been developed, such as MESA in Africa and ProSPER Net in Asia and the Pacific. The most positive development, however, is the enthusiastic support for the aims and goals of the DESD among many working in education and learning, and among learners at all levels.

At the UNESCO conference in Bonn, it became clear that the high ambitions of the DESD 'to break down the traditional schemes' and 'to reform (all) education' are very difficult to achieve. The massive efforts and costs involved in the development and re-development of curricula and the training and re-training of teachers will make it very difficult to achieve these ambitions overnight, or even in a decade. The success of the DESD will depend on the degree to which principles of respect, self-organization and participation will be allowed to flourish. Only by mobilizing all those working in or interested in education for the goals and aims of the DESD, can the Decade become a success.

Universities and sustainable human development

Universities must play a role in sustainable human development through their research, education and social services, on the local, regional, national, international and global levels. This implies the strengthening of the full knowledge triangle: education, scientific knowledge in a broad sense, and technological as well as social innovations.

Without attempting to downplay the differences that continue to exist between the opportunities of developing and industrialized countries to participate in the global economy and information networks, it is clear that whether or not one can benefit from globalization much depends on the skills one possesses — skills to obtain and analyse information, to make independent judgments and to communicate across social and cultural boundaries — rather than just being a function of location. This is where education comes in.

Education, understood broadly as an ongoing process, including both formal and informal modes of teaching and learning, plays a crucial role in preparing people for their futures in a highly connected, interlinked, globalized world. Higher education, in particular, occupies a central position in shaping the way in which future generations learn to cope with the complexities of globalization, trade, poverty, development and environment. Higher education prepares an important portion of the population for their entry into the labour market, including most of the teachers who are responsible for education at the primary and secondary levels. Here, universities are called upon not only to teach the skills required to advance successfully in a globalized world, but also to nourish in their students, faculty and staff a positive attitude towards environmental issues and cultural diversity.

The Ubuntu Alliance

Since the Earth Summit in 1992, sustainable development has been high on the political agenda and education was assigned an important role in Agenda 21. However, the role of education and, in particular, of educators, was not well articulated and educators were not defined as one of the stakeholder groups. During the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, various initiatives were launched to strengthen the role and contribution of educators in ESD, including the Global Higher Education for Sustainability Partnership (GHESP)[4] and the Global Virtual University for sustainable development[5]. The Japanese and Swedish Governments chose ESD as a spearhead for their contributions and, based on their proposals, the United Nations decided to designate 2005 as the Year and 2005-2014 as the UN 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 ESD. 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.

The signatories of the Ubuntu Declaration are jointly working towards:

- Strengthening the role of educators in the Commission on Sustainable Development 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
- Working towards a new global learning space on education and sustainability that promotes cooperation and exchange in education at all levels and among all sectors of education around the world. This space must be developed on the basis of international networks of institutions and the creation of regional centres of excellence, which bring together universities, polytechnics, and institutions of secondary education and primary schools.

To develop the curricula and courseware needed — and regularly update these — and to inform teacher training and re-training in effective ways, the Ubuntu Declaration Group, 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 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. The Earth Charter, too, gives important perspectives and concepts to build upon while constructing curricula and training teachers.[6]

The signatories of the Ubuntu Declaration have worked closely with UNESCO to promote the DESD, and have contributed to the draft framework of the International Implementation Scheme. In that process they have also decided to choose as their most important concrete project the development of the global learning space, based on regional centres of expertise (rather than excellence), which include NGOs, public authorities, museums, botanical gardens and companies that were prepared to contribute to ESD projects in their region.

RCEs: an innovative initiative

Regions include parts of countries like Bretagne, Tohoku or Catalunya. The regional centres should include institutions of primary, secondary and tertiary education, research institutions, science museums, non-formal education, zoos, parks, etc. Prizes could be awarded for innovative, joint projects of two or more institutions from different sectors. The regional centres of expertise might be identified in a comparable way to the monuments on the cultural heritage list, by a peer group established by the Ubuntu Alliance. This has the distinct advantage that local/regional conditions can be fully taken into account. The RCEs would contribute to location-specific knowledge. Successful RCEs would run a portfolio of highly attractive and effective ESD projects, each of these run by two or more member institutions coming from different sectors of society.

The initiative of the Ubuntu Alliance has already received much positive global response. The good advice and strong support for new RCE initiatives, given by the staff of the Global Service Centre located at UNU-IAS in Yokohama, has been crucial for the successful creation of RCEs and ultimately, the envisaged Global Learning Space on ESD. By the spring of 2010 the Group of Peers of the Ubuntu Alliance had officially acknowledged 74 RCEs, of which 12 are located in Africa, 28 in Asia and the Pacific, 23 in Europe and the Middle East, and 11 in the Americas. In different ways, the RCEs have also started to shape the global learning space by developing joint projects and sub-networks. In May 2010 the RCE Curitiba organized the Fifth International RCE conference, and in December 2009 the RCE Graz-Styria organized the Third European RCE meeting and the RCEs of Asia and the Pacific met at an event organized by the RCE Delhi and TERI at the TERI University.

These regional centres of expertise will produce a visible output as a global network. In the process, it will be possible to mobilize many people, learn from their creative ideas, build on diversity and promote international cooperation in ESD. The regional centres and their mutual relations form the global learning space for sustainable development; the major tangible outcome of the DESD.

Image: UNU-Institute for Advanced Studies, Yokohama, RCE-Bulletin

Participants in an office productivity training programme, part of the RCE Cebu-APFED sponsored KnowledgeNetwork

What is learning for sustainable development?

Professor Stephen Sterling, Head of Education for Sustainable Development, University of Plymouth, UK and Senior Advisor to the Higher Education Academy, Education for Sustainable Development Project

The key to a more sustainable future is learning. A self-evident statement perhaps, but it hides an important truth: that some learning — indeed, much learning that dominates currently in educational systems — will not take us towards a more sustainable future, but rather the opposite. So 'learning for sustainable development' is a radical step and movement that seeks to help assure a more livable, secure and harmonious society than that in prospect.

A first step towards understanding the nature and implications of learning for sustainable development is to recognize that the world is on an unsustainable course, as has been evidenced by a stream of international reports over some years.[1] As the Tellus Institute states: "We stand at a historical crossroads, heading into an uncertain and perilous future."[2]

The concept of sustainable development, however it is perceived (it has been discussed and argued over in detail since coming to prominence with the Brundtland Report of 1987) can nevertheless be seen as an attempt to articulate those goals, principles, values and processes which can help change our collective direction towards a more hopeful and secure future. Such a trajectory takes into account the present and future social, economic and ecological well-being of people and communities, in the context of the Earth's ecological health and resilience. It is driven by rising concern in public life and wider society as people in all sectors become increasingly aware of the negative impact and threat of sustainability issues such as climate change, economic vulnerability, social justice, resource depletion and species loss — as well as of positive opportunities to develop more sustainable lifestyles and economic activities. In essence, sustainability is about trying to ensure a society, economy and ecology that are viable now and in the long term. As such it has implications for most aspects of human activity, from local to global scales — production and consumption, energy, transport, food and agriculture, construction and housing, trade and equity, employment, social relations and so on.

Preparing for change

Evidence suggests that we are on the cusp of very different patterns of social and economic organization, driven by and in response to the end of cheap energy and the effects of climate change, necessarily towards more localized, low-carbon, low-waste, resource-efficient economies.

This presents a very real and urgent challenge for educational systems and learning, which begs deep questions about their 'responseability', that is, the ability of the educational community as a whole to respond adequately to the emerging conditions of both threat and opportunity that face our communities, our graduates and our children. To clarify this challenge, we need to make a distinction between two arenas of learning: institutional learning and designed learning. *Designed learning* is the concern of all educational programmes: it is planned, resourced and provided for different groups such as school pupils, tertiary-level students and adults in community education. *Institutional learning* refers to the social and organizational learning that the policy makers and providers may themselves undergo or experience: for example, government educational departments, schools, universities and educational agencies.

The critical point is that sufficient change towards sustainability in designed learning, including aims, curricula, methods, assessment, reward structures etc., is directly dependent on sufficient institutional learning — which can, in turn, facilitate re-design. Without this, layering or inserting sustainability into educational policy and practices that otherwise remain largely unchanged may have value, but is insufficient. In other words, sustainability requires learning within educational systems, not just learning through educational systems. As I have argued elsewhere, sustainability "implies a change of fundamental epistemology in our culture and hence also in our educational thinking and practice. Seen in this light, sustainability is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, of pedagogy, of organizational change, of policy and particularly of ethos."[3] More widely, as Williams suggests: "This learning…needs to be a core part of learning across society, necessitating a metamorphosis of many of our current education and learning constructs."[4]

The significance of this lies in the need to re-design educational programmes so that learners can experience the kind of education that is appropriate to our times. In essence, this is education that prepares people to cope with, manage and shape social, economic and ecological conditions characterized by change, uncertainty, risk and complexity.

Common themes and new perspectives

What this means in practice has been addressed by a growing literature around sustainability education

Image: University of Plymouth

Gardens at the University of Plymouth are being opened for environmental teaching

and learning over recent years. Yet there is potential for confusion amongst those coming to it for the first time, given all the lists of key concepts, values and skills that various writers and bodies suggest are essential in learning for sustainable development.[5]

I would suggest that the newly interested policymaker or practitioner look for commonality between the various frameworks, regarding them as indicative rather than prescriptive. They are there to be used, edited, critically discussed and adapted as part of the learning process, rather than adopted wholesale.

Whilst lists of sustainability-related concepts, skills and values are beneficial, at a more fundamental level, it is the change of perspective and learning culture which is key in order to move us away from the perspectives and culture that have supported unsustainability. In terms of educational practices, it means that curriculum designers and teachers develop learning situations where the potential for transformative learning experiences, both for themselves and their students, is made more likely. In essence, this shift can be expressed in terms of eight key questions that can help unlock thinking when considering any issue:

Holistic: "how does this relate to that?", "what is the larger context here?"
Critical: "why are things this way, in whose interests?"
Appreciative: "what's good, and what already works well here?"
Inclusive: "who/what is being heard, listened to and engaged?"
Systemic: "what are or might be the consequences of this?"
Creative: "what innovation might be required?"
Ethical: "how should this relate to that?", "what is wise action?", "how can we work towards the inclusive well-being of the whole system – social, economic and ecological?"
Practical: "how do we take this forward with sustainability in mind as our guiding principle?"

Such learning will ideally be reflexive, experiential, inquiring, experimental, participative, iterative, real-world and action-oriented. The sustainability learner will be characterized by such qualities as resilience, resourcefulness, creativity, systemic and critical thinking, enterprise, cooperation and care. What is required is 'learning as change' in the active pursuit of sustainability and in the design, development and maintenance of ecologically sustainable economic and social systems through changed lifestyles and innovation. Such engaged learning goes beyond mere 'learning about change' or preparative 'learning for change' which may be seen as rather more passive steps on the way to a deeper learning response.

This may sound far from the realities of everyday educational practice, but experience in the UK, for example, shows a rapid increase in interest and activity around sustainability education and learning in recent years. Thus, while there is still a long way to go in the higher education sector, many universities — spurred on by funding council policies (not least relating to carbon management) and increasing demand from an engaged student body — are recognizing sustainability as an imperative that needs a whole-institution response. This has been supported strongly by such organizations as the Higher Education Academy[6] and the Environmental Association for Universities and Colleges,[7] which play an important facilitative role in developing and energizing networks of key institutions and individuals, undertaking research and spreading good practice. At the the same time, lead institutions are pushing the pace of change for the sector as a whole. This includes the University of Plymouth, where the whole-institution programme working on Campus, Curriculum, Community and Culture over the last five years now sees sustainability linked strongly to enterprise as the touchstones of the university's identity and work.[8]

Last chance to make a difference

The UK Future Leaders Survey 2007/08, which interviewed some 25,000 young people in the UK, makes it clear that they are "intensely aware of the big challenges facing the planet", but also notes that they are the last generation with a chance to put things on a more sustainable course. Given this critical challenge, learning for sustainable development now needs to be absolutely central to educational policy and practice and enmeshed with all other agendas. As a recent UK report on education for sustainable development in the UK shows,[9] at this point, we can be cautiously optimistic – but the unsustainability clock is still ticking.

Sustainable school feeding

Nancy Walters, Chief, School Feeding Policy Division, World Food Programme

Currently an estimated 66 million children attend school hungry — about 40 per cent of them in Africa — and an additional 72 million children in this age group do not attend school at all. As the leading humanitarian agency in the fight against hunger, the World Food Programme (WFP) has been supporting educational development through school feeding programmes for over 45 years. Through partnerships with both the public and private sector, 22 million children in 63 countries benefited from WFP's school feeding programmes in 2009. Of these, 10.5 million were in 37 African countries.

Food security and nutrition play an important role in educational development. School feeding offers an incentive for households to send their children to school to receive an education, while also reducing short-term hunger and improving their nutrition and health. Evidence has shown that where there is a social safety net that addresses food security and nutrition to school children, access to education increases and educational performance improves.

Over the last year, WFP has revised its school feeding policy to focus on sustainability. In the past, WFP very often implemented school feeding as a stand-alone intervention, with little planning for national ownership. WFP, governments and other partners have recognized the potential of school feeding as part of a holistic national development strategy and have shifted the school feeding paradigm to focus on sustainability and national ownership. Since 2008, the World Bank and WFP have been working together to help counties transition and develop the capacity for sustainable school feeding programmes. A 2009 joint publication by the World Bank and WFP, titled *Rethinking School Feeding: Social Safety Nets, Child Development, and the Education Sector*, provides a road map for countries of the costs and benefits of implementing sustainable school feeding programmes, in the context of a productive safety net and a fiscally sustainable investment in human capital.

The strength of school feeding as an educational tool is its long-term investment in human capital by achieving multi-sector benefits in nutrition, education, value transfer, gender equality and wider socio-economic gains. By investing in the health and nutrition of school-age children, a country can increase the human capital of its younger generation and achieve sustainable economic growth and human development. The combination of multiple benefits with the shift in the school feeding paradigm makes significant contributions in building sustainability.

The multiple benefits of sustainable school feeding

School feeding programmes are much more than simply giving food to people in need. Solid empirical evidence of the impact of school feeding programmes on educational outcomes proves that school feeding increases school enrolment and attendance by reducing school drop-out rates.[1,2,3] There is also significant evidence that proves school feeding goes beyond the educational outcomes, producing an array of benefits across disciplines. The productive safety-net function provided through its multiple benefits in education, nutrition and gender is well known. Innovative school feeding programmes provide multi-sector benefits such as education, improved environment, gender equality, food security, poverty alleviation, nutrition and health — in one single intervention. School feeding is an investment in human capital, which yields returns in terms of global stability and building a sustainable world.

Food security and nutrition: enabling aspects of education

Food security and nutrition play critical roles in education and human development. Empirical evidence shows that good nutrition is a prerequisite for effective learning. The interdependent linkages between caloric intake, nutrition and cognitive and physical development are overwhelming. School feeding is an intervention that enhances the diet and increases the energy available to a child. It targets micronutrient deficiencies, which are widespread among school-age children in developing countries and which increase susceptibility to infection, leading to absenteeism and impairing learning capacity and cognition.[4,5,6,7] Improving micronutrient status through food fortification or micronutrient powders, particularly of iron, B-vitamins, vitamin A and iodine, contributes directly to enhanced cognition and learning capacity. Recent studies in Kenya and Uganda proved that both in-school meals and take-home rations (THR) reduce anaemia prevalence.[8,9]

There exists a large body of literature that demonstrates a systematic link between physical trauma and specific cognitive and learning deficits.[10] For instance, stunting, which is typically caused by malnutrition and insufficient caloric intake, has been found to be associated with reduced cognitive skills and slower progress in school as a child, as well as reduced earnings as an adult.[11] Food and nutrition security are the key ingredients or even the enabling aspects of educational development. Nutritious foods provide children with the capability to function in the classroom.

Gender, orphans and vulnerable children

It has been proved that school feeding contributes to improved education for girls, as both in-school meals and THR are effective in targeting gender objectives. This is particularly useful in boosting girls' enrolment

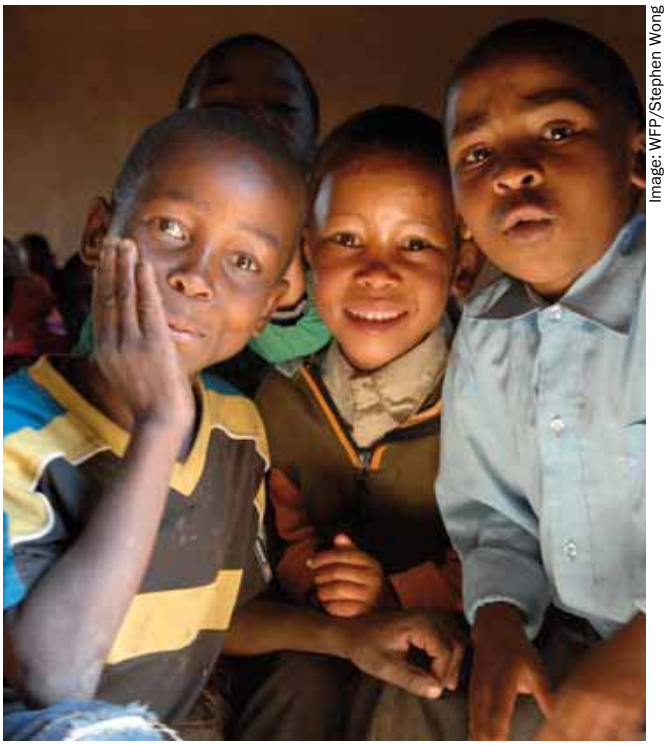


Image: WFP/Stephen Wong

Food security and nutrition play critical roles in education and human development

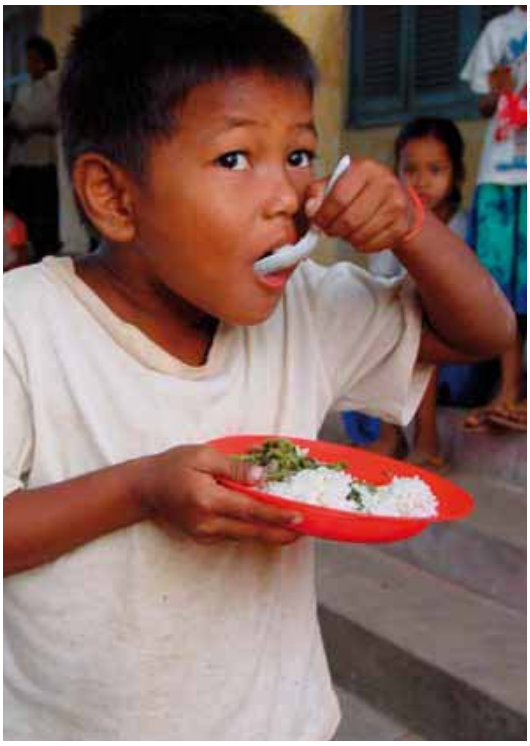


Image: WFP/Heather Hill

A schoolboy in rural Cambodia tucks into a healthy meal, courtesy of the UN World Food Programme

where access to education is limited. Educated girls are more likely to have fewer and healthier children and to head families that are food secure. School feeding closes the gender gap in schools and helps to empower women. It leads to improved protection from HIV/AIDS and better access to work opportunities for women. It changes the lives not only of girls but also of their future children. Maternal and infant mortality rates decrease, and better-educated girls make more informed choices. The World Bank estimates that only one additional year of schooling for girls reduces the birth rate by 10 per cent, and that every extra year of schooling provided to 1,000 girls results in 60 fewer infant deaths.[12,13]

When school meals are combined with THR, the effect on girls is even greater. THR draw girls to school, maintain their attendance and increase their progress from grade to grade, effectively eliminating the gender gap in school. A major WFP review documented increased enrolment of girls in higher grades in schools with combined on-site and THR programmes.[14] Similarly, the THR programme in Bangladesh increased girls' enrolment by 44 per cent and boys' by 28 per cent in schools on the programme, while enrolment in non programme schools increased by only 2.5 per cent during the same period.[15]

Value transfer

The school feeding value transferred frees up resources within households, averting negative coping strategies and allowing investments in productive assets. During periods of shock and reduced purchasing power, families often resort to negative coping mechanisms, including taking children out of school to save on school fees and related expenses.[16] School feeding programmes can help to safeguard households' investments in education by defraying some of the costs of schooling and encouraging parents to enrol their children in school and ensure that they attend class regularly throughout the complete cycle. This helps protect children from the risk of both formal and informal child labour and facilitates social integration.[17]

The value transferred is equivalent to the value of the food transfer delivered to the child at school, the value of the THR, or both. This serves as an incentive for households to send their children to school and ensure that they continue to attend. The provision of food therefore alleviates short-term hunger, while supporting the longer-term goals of educational attainment and improved nutrition and health.

School feeding value transfers have the potential to increase school enrolment and attendance at times when food-insecure families with low purchasing power may be at risk of resorting to negative coping strategies, including taking children out of school. THR are the best vehicle for maximizing the benefits that a school feeding safety net offers, by extending the value and impact of the transfer beyond the benefits that a child receives from the food ration consumed in school. THR can easily be targeted to the specific groups that may be most in need of support, such as girls, orphans or other vulnerable children of school age and possibly other members of a household.

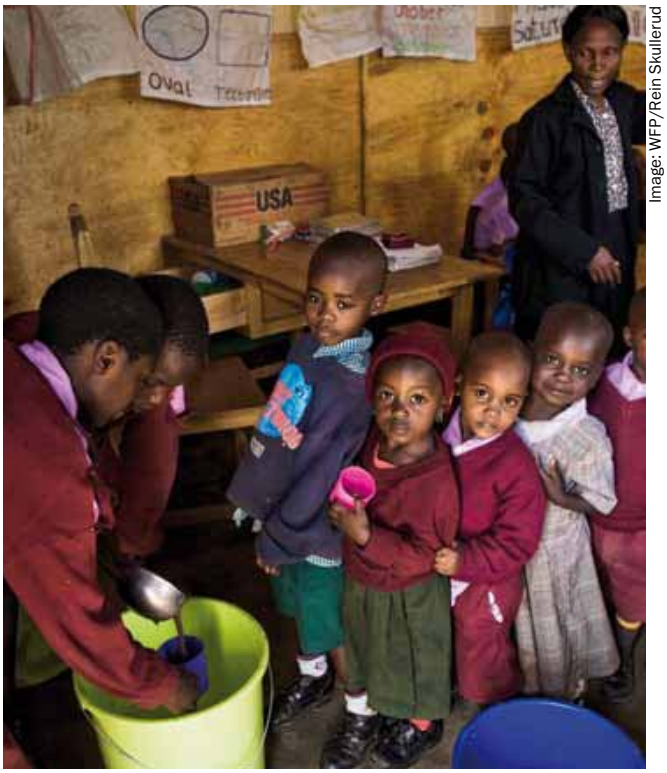


Image: WFP/Rein Skullerud

The Baraka Za Ibrahim Children's Centre, a beneficiary of the WFP School Meals Programme. The WFP's commitment to School Meals Programmes in Kenya is high

Image: WFP/Rein Skullerud

WFP School Meal project in Leogane, Darbonne. "Ecole Saint Terese de Darbonne"

Complementary interventions: a platform for building sustainable communities

School feeding serves as a platform for linking with other complementary interventions to achieve additional sustainable development outcomes. Food that is sourced locally contributes not only to the nutritional and educational benefits among children in schools, but also to the local community. When school feeding programmes are linked to procuring and processing food locally, the local economy benefits, which increases incomes among farmers, and brings other economic development outcomes. A modelling study in Kenya estimated that 175,000 local farmers would increase their annual incomes by USD 50 per smallholder if the school feeding programme were to purchase local maize.[18] Local procurement supports local farmers and local markets, further contributing to long-term sustainable development.

School feeding serves as a platform for partnerships with governments, UN agencies and the private sector to implement additional development initiatives. United Nations agencies work together, to provide the Essential Package of 12 complementary interventions. United Nations Children's Fund (UNICEF) and WFP collaborate through the Essential Package, an integrated package of cost-effective interventions, to improve the nutritional status and health of school children. School feeding is a platform for other essential package interventions such as basic education, health, nutrition and hygiene information, promotion of girls' education, school gardens and environmental education, and improved stoves to reduce the negative environmental impact of cooking. The Essential Package of complimentary interventions links with school feeding activities to teach children how to build a more sustainable world.

Sustainability

WFP's role is shifting from direct implementation with cooperating partners to enabling, building capacity, advising and acting as a repository for best practices. The way forward is to assist national governments in designing sustainable programmes that are nationally owned, nationally led and locally sourced. There are three main areas of innovation in school feeding:

- Knowledge, in-depth analysis and understanding: WFP will provide analytical support and advice on needs assessment, targeting, cost-effectiveness and cost containment to governments that seek it, thereby enhancing design and implementation
- Support for governments' coordination of national school feeding strategies, facilitated by bringing the stakeholders together to ensure an effective national approach to school feeding programmes that respond to local needs
- Capacity development and technical support to ensure sustainability, to increase governments' capacity to design and implement programmes that are sustainable and affordable and that can be brought up to scale.

These three elements all help to enhance the sustainability of school feeding as a productive safety net. Framing school feeding programmes as a safety net opens the door to new national and global funding

Image: WFP/Stephen Wong

WFP food aid distributions target the most vulnerable, including people living with HIV/AIDS and their households, orphans and other vulnerable children, pregnant and nursing mothers, underweight children under the age of five and the elderly

Image: WFP/Rein Skullerud

In Luangua an NGO is teaching ex-poachers and ex-charcoal burners the techniques of organic agriculture which contributes to income generating as well as environmental protection

sources other than ministries of education, such as funding for poverty reduction strategies, social protection, the Fast Track Initiative and the World Bank's recently established Rapid Social Response Fund.

Since early 2008, the World Bank Group and WFP have been working together to help countries develop sustainable school feeding programmes that provide social safety nets and promote education. Eight drivers of sustainability were identified through an analysis of WFP's 45 years of school feeding and the recent joint World Bank/WFP school feeding analysis.[19] All school feeding projects are now to be conceived and designed to ensure:

- Sustainability
- Sound alignment with the national policy frameworks
- Stable funding and budgeting
- Needs-based, cost-effective quality programme design
- Strong institutional arrangements for implementation, monitoring and accountability
- Strategies for local production and sourcing
- Strong partnerships and inter-sector coordination
- Strong community participation and ownership.

This concept of sustainability and government ownership of school feeding programmes also incorporates a sustainable approach to locally procure food for school feeding within the country. The Home Grown School Feeding initiative is working together with New Partnership for Africa's Development (NEPAD)/Comprehensive Africa Agriculture Development Programme (CAADP), WFP's Purchase for Progress programme and a grant to the Partnership for Child Development from the Bill & Melinda Gates Foundation (BMGF). Through these partnerships, this innovative initiative, which aims at providing targeted school children with locally produced food, will continue to expand.

The Home Grown School Feeding approach is holistic and integrated. On the one hand, it provides incentives for education (both enrolment and retention of girls and boys) and responses to nutritional gaps and short-term hunger. On the other hand, it creates opportunities for stimulating and improving local farmers' production, expanding local demand and increasing local market value. Home Grown School Feeding has the potential to empower communities, protect the environment, build local markets and support local farmers.

An essential intervention

School feeding is an intervention that addresses various elements of sustainable development. The strength of WFP in addressing educational development is its capacity to address the bidirectional relationship between education and food and nutrition security, as well as the ability of school feeding to be a platform for complementary activities. It is evident that through partnerships, sustainable school feeding produces outcomes across disciplines that are essential to building sustainable communities.

How the Education for Rural People policy contributes to sustainable development

Lavinia Gasperini, Senior Officer, Agricultural Education, Office of Knowledge Exchange, Research and Extension, Food and Agriculture Organization of the United Nations

Nearly one out of six of the current inhabitants of the world suffers from hunger and illiteracy and the majority of those affected are in Africa. Education for Rural People (ERP) is a policy approach aimed at reducing this figure by helping the approximately one billion food-insecure people, the 776 million illiterate adults and the 75 million illiterate children within the Millennium Development Goals (MDGs) framework. Education, labour, land, livestock and infrastructure are the key assets enabling rural households to escape poverty, and ERP is one of the most powerful weapons against hunger. A 2007 report from the British Department for International Development (DFID) indicates that more than USD11 billion is needed annually for education if Africa is to have any hope of getting all children into primary school by 2015. The ERP partnership flagship operates under the leadership of the Food and Agriculture Organization (FAO) of the United Nations and in close collaboration with UNESCO and more than 370 partners.

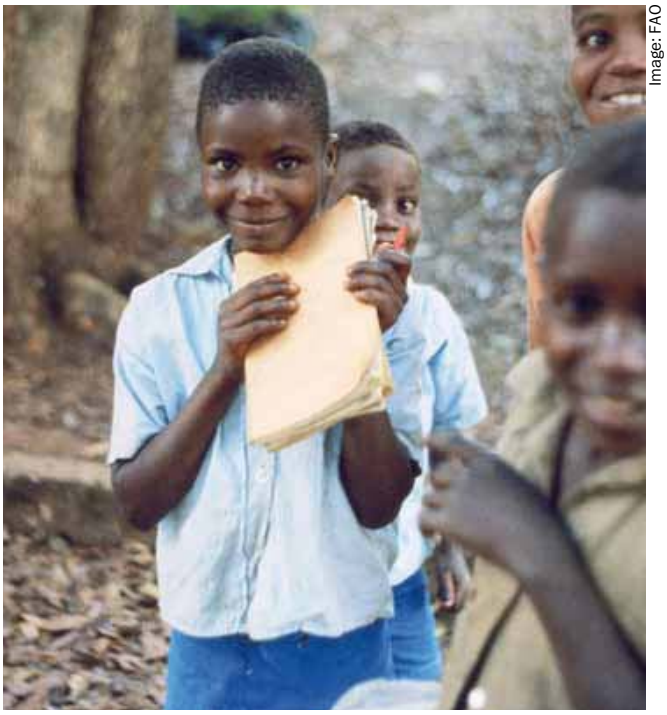


Image: FAO

Satellite schools are established in remote areas for the youngest children

ERP is one of the Partnerships for Sustainable Development of the United Nations Commission for Sustainable Development. The partnership — launched during the World Summit on Sustainable Development (WSSD) — is a worldwide call to action to foster rural people's capability to be food secure, to manage natural resources in a sustainable way and to provide education for all rural children, youth and adults. The partnership aims at contributing to the removal of barriers that prevent poor people from using their capacity, including the urban-rural knowledge and education gap. ERP works through the identification of political, institutional, organizational and individual opportunities and constraints that poor people face in accessing education and training services at all levels of education in both formal and non-formal settings. It seeks to empower the rural poor to become fully integrated actors in the development process by promoting collaboration among the education, agriculture and rural development sectors to ensure education and skills training for all rural people.

The strategy addresses research, knowledge generation and sharing, advocacy, policy and capacity development, as well as normative and field work. ERP is also one of the nine flagships of the Education for All (EFA) programme led by UNESCO. The most important products of ERP to date have been the knowledge generated and disseminated, the innovations identified, and the lessons learned by ERP partners related to policy and practice in areas such as education quality and access, gender-responsive learning environments, parent and community engagement, and accommodation of non-traditional learners, to name just a few. These knowledge products have formed the basis for national and regional capacity development meetings worldwide.

Education is essential to FAO, as indicated in its Constitution,[1] to achieve the goals of raising levels of nutrition and standards of living, bettering the conditions of rural populations, and ensuring humanity's freedom from hunger.[2]

ERP employed a research-based policy approach involving both FAO and UNESCO in promoting multisectoral alliances between ministries of education and agriculture. Work took place simultaneously at the policy and field levels with an emphasis on policy work to ensure the highest impact in terms of cost-effectiveness.

Challenges and responses of the ERP global partnership

Challenges	Responses
Access to education and training	Positive discrimination policies and programmes for rural people including: Education and training fee removal; Free access to learning materials; School feeding programmes to improve attendance; Free school transport programmes; Expansion of the school network and training centre construction; Double-shift classes and after-hours adult education; Targeting the needs of specific rural groups; Satellite schools in remote areas for the youngest children and girls
Quality of education and training	Application of information and communication technologies as appropriate; Improved teacher training and professional development; Creation of conditions for teacher retention in rural areas and reduction of rotation; Design of training materials to address rural life problems; Combination of academic and life skills for greater relevance; Use of school gardens as living laboratories and integration in school curriculum; Provision of a safe and adequate learning environment; Farmer participation in curriculum planning and training events; Use of improved monitoring and evaluation tools
Decentralization and community involvement	Combination of national and local curriculum planning; Community participation in curriculum development; Community-based approaches to increase community ownership; Education that is relevant to rural livelihoods and the community; Parent-teacher associations to improve school resources; Involvement of communities through school gardens; Community monitoring of quality and relevance
Gender-responsive learning environments	Flexible training programmes to accommodate labour peaks; Well-supervised boarding facilities to safeguard women and girls; School meals for all rural children; Take-home rations for girls as an incentive for families; Half-day farmer training for women with responsibilities at home
Organizational and institutional efficiency	Coordination among ministries of education and agriculture; Coordination among public providers of extension and education, non-governmental organizations (NGOs) and the private sector; Multi-stakeholder participatory planning of programmes to support ERP; Adult basic education classes run by extension officers
Accommodation of non-traditional learners	Flexibility in the training and education calendar to accommodate weather, cropping patterns and nomadic movements; Provision of education for out-of-school rural children, youth and adults (especially girls and women), retired child soldiers, refugees and displaced persons, people in inaccessible and remote areas, disabled persons, ethnic minorities, working children, the elderly, nomads and pastoral communities, people suffering from diseases, and others; Use of front-line extension staff to reach remote audiences, farmer-to-farmer training approaches and non-formal basic education approaches
Redefinition of agricultural education	Revised curricula at technical and vocational agricultural education and training colleges for improved training of technicians; Improved training of trainers for agricultural education; Agricultural education that reflects the fact that both on-farm and off-farm competencies and skills are important to sustaining livelihoods of people in rural areas; Agricultural education that reflects changes in technology, global supply chains, market and health challenges, on-farm and off-farm employment, environmental changes, and enterprise development
Skills training for rural people	Increased and improved formal and non-formal skills training for youth and adults; Training for school drop-outs; Diversification of competencies and skills to reduce vulnerability and foster resilience to address shocks; Provision of literacy and numeracy training together with skills training; Training in both life skills and job skills
Recruitment and retention of extension staff and school teachers	Recruitment of teachers and extension staff from rural areas; Bonuses and higher salaries as incentives for rural staff; Provision of subsidized housing; Posting of newly qualified staff in pairs; Creation of career progression options; Provision of land and training in agriculture; Profit sharing in school-based income-generating activities
Effective pro-rural, people-centred policies	Increased financing for ERP; Education and training data disaggregation for urban and rural people; Policies that recognize the diversity of needs of rural people; Policies that recognize agroecological and geographical circumstances as well as socio-economic and cultural differences of residents of rural areas

Source: FAO

Research was conducted to collect successful responses to challenges confronting policy-makers and government and civil society front-line practitioners working to provide effective education and training for rural people. This information, as well as ERP good practices and training materials, was published in the global repository of the knowledge base of ERP[3] and shared worldwide in electronic and print formats so that the public could benefit from the experiences of others working in this field. The above table summarizes some of the important challenges and responses identified since the launch in September 2002 of the ERP global partnership designed to contribute to the acceleration of progress towards the MDGs and sustainable development.

The key policy considerations reached by the partnership are that, while considerable progress has been made, much work remains to be done. Six years of policy, advocacy and capacity development work has led

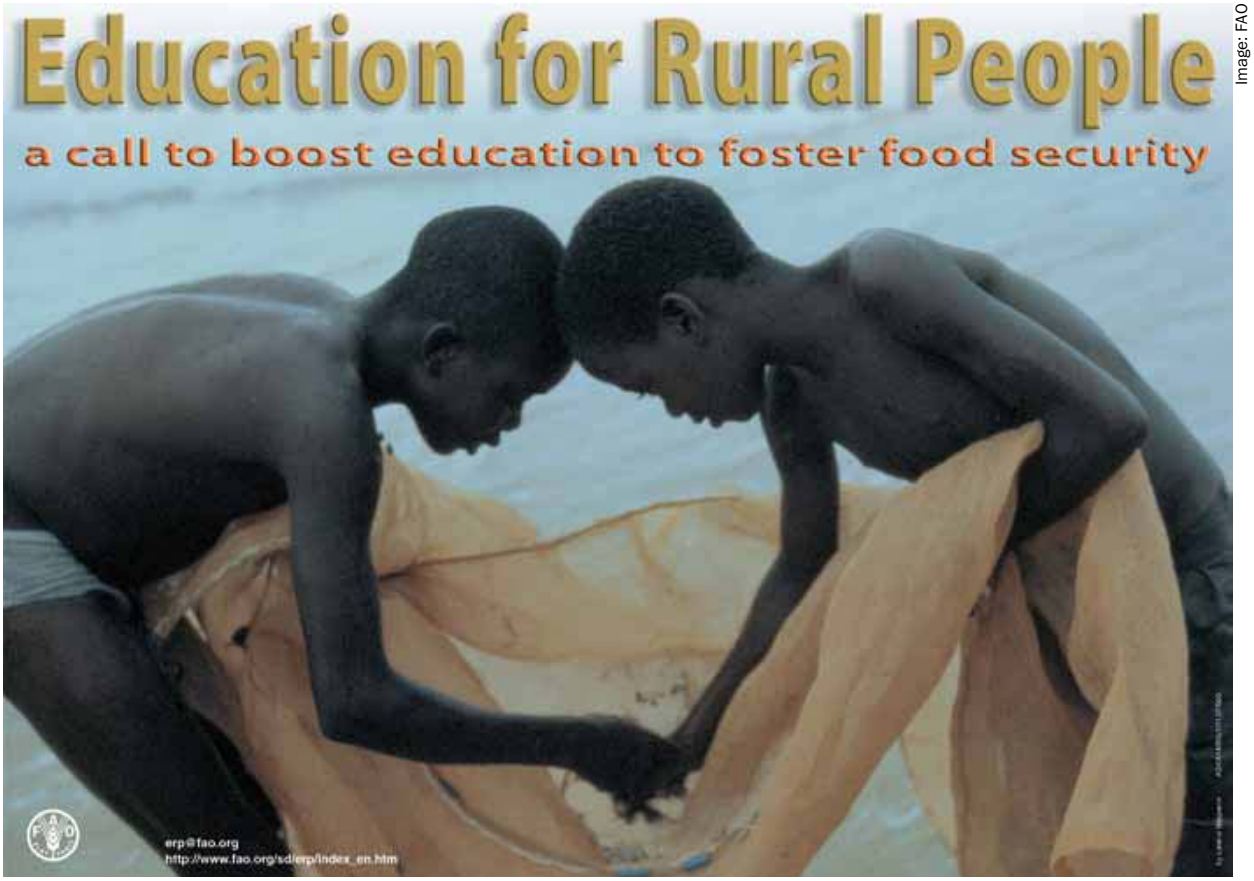


Image: FAO

The Education for Rural People partnership is a worldwide call to provide education for all rural children, youth and adults

to important international recognition of ERP's key role in achieving the MDGs and especially of its key role in poverty reduction, food security and sustainable natural resources management. However, despite the progress made towards all eight MDGs, according to the United Nations, we are not on track to fulfil our commitments.

Other conclusions reached by the partnership are as follows:

ERP is an essential foundation stone for achievement of the MDGs
Better-educated rural people have better employment prospects, better health, greater food security, less vulnerability to shocks, and better coping mechanisms in dealing with the pressures of climate change, food crises, globalization and challenges to cultural traditions.

ERP is a policy and programme priority
National governments, international agencies, bilateral donors and NGOs need to increase their policy and programme emphasis on ERP. In particular, UNESCO and the World Bank, given their lead roles in EFA and the Fast Track Initiative,[4] can ensure ERP becomes an integral part of Poverty Reduction Strategy Papers (PRSPs) and EFA National Plans.

Funding for ERP needs to be a national and international priority
Major policy and resource allocation shifts will need to take place if significant progress is to be made in poverty reduction and EFA. ERP needs an increased share of public resource allocations and should be at the core of National Rural Development and EFA Plans.

Effective management of ERP requires reliable data
Improved statistics and Education Management Information Systems (EMIS) are needed. Pro-poor policies call for the disaggregation of education and literacy data into rural and urban populations in the UNESCO international statistics and the EFA Global Monitoring Report, as well as within national EMIS.

Partnerships are essential to progress
Partnerships among international organizations, governments, non-governmental organizations, community-based organizations, universities, the private sector, the media and others will continue to be essential to the success of ERP initiatives.

Intersectoral cooperation is necessary at the national level
Coordination between ministries of agriculture and education is essential if rural people are to be effectively served. Each has assets and expertise critical to these efforts.

We must work as 'One UN'
Intersectoral cooperation at the international level is essential. As the lead agency for the ERP partnership, FAO will continue to advocate for stronger governmental commitments to a higher level of resources for ERP. UNESCO and

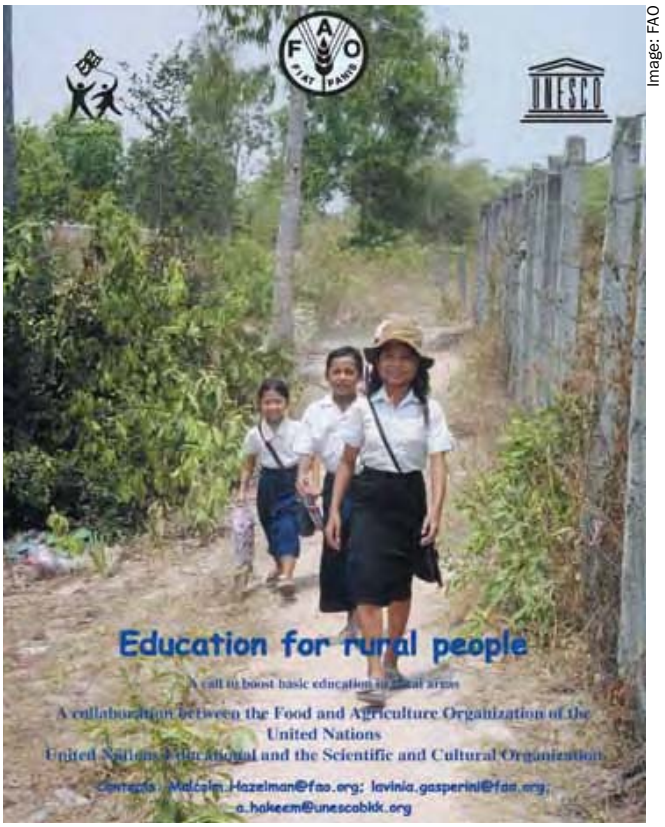


Image: FAO

Partnerships among international organizations will continue to be essential to the success of ERP initiatives

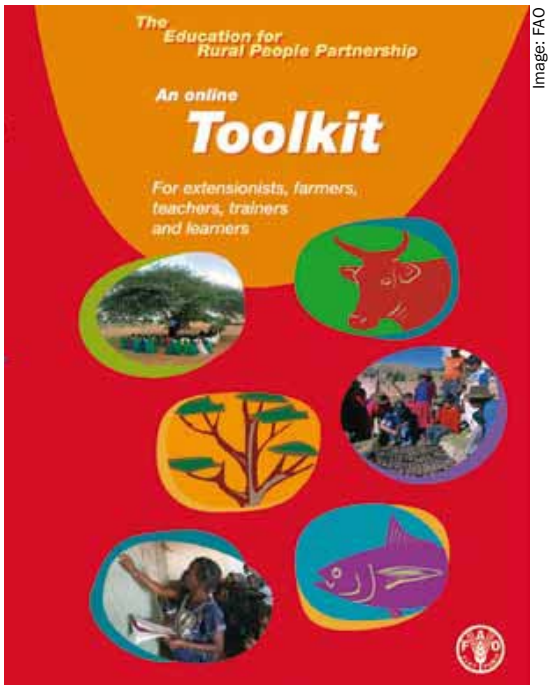


Image: FAO

Skills training for rural people: a needs-based approach

the World Bank are uniquely suited to facilitating ERP implementation at the national level, both within their mandates to support the advancement of education and training and given their privileged dialogue with ministries of education. UNESCO's leadership and technical support for ERP at the country level during this next phase would need to be strengthened, and FAO is in a good position to contribute as a supporting entity to the work of UNESCO in the specific areas of FAO expertise.

Agricultural education must be redefined
Today, a broader view of the life skills necessary to thrive in rural areas has emerged. There is a need to broaden the agricultural education paradigm to embrace the concept of sustainable rural development.

Rural education requires a needs-based approach
'One size fits all' standardized education strategies are not effective in reaching rural people, who have a variety of specialized needs that have to be addressed to expand access and improve quality of education and training for children, youth and adults.

There are many options for assisting rural people to develop their capacity
These options have been successfully implemented in various countries around the world. ERP is conceived to support capacity development for sustainable rural development, including ERP-specific initiatives.

Rural girls and women are the most vulnerable
Rural girls and women suffer geographical and gender discrimination. Strategies to boost female literacy and rural girls' participation in education include removing cost barriers, strengthening rural schools as gender-sensitive centres of quality learning, and developing gender-sensitive learning content and school environments.

Finally, ERP is a major challenge and an obvious opportunity. The future challenges for ERP arise from the fact that the vast majority of those excluded from education live in rural areas. Therefore, ERP is vital, urgent and essential if the MDGs and goals for sustainable development are to be met. The youth of today are the leaders and the farmers of tomorrow. Rural youth represent the majority of the population in most of the less developed countries and an explicit focus on their needs and potential contributions to our common future is a matter of urgency.

The future challenges for ERP
The vast majority of those excluded from education live in rural areas. Therefore, ERP is vital, urgent and essential if the MDGs are to be met. Preparing rural citizens to engage successfully in knowledge-based economies, to respond to market and climate changes, to develop their resilience to address a variety of shocks, and to weather food crises associated with global economic shifts, is essential to their well-being. Helping rural people to become active citizens contributing to peace and democracy and enjoying long, healthy and creative lives is central to the achievement of the MDGs.

This article is based on FAO 2009, Education for Rural People: the Role of Education, Training and Capacity Development in Poverty Reduction and Food Security. FAO, Rome.

Education for sustainable cities

Training and Capacity-building Branch, UN-HABITAT

Education has a key role in promoting socially and environmentally sustainable cities. It is also an important factor in the realization of the Habitat Agenda goal of adequate shelter for all. UN-HABITAT is engaged in improving the quality and range of appropriate educational opportunities on urban issues through activities such as:

- Developing partnerships with universities
- Promoting the values and principles of sustainability in key areas such as water and sanitation as well as climate change
- Actively participating in the inter-agency committee for the UN Decade of Education for Sustainable Development (DESD)
- Raising public awareness.

UN-HABITAT activities in support of the DESD are conducted within the Medium Term Strategic and Institutional Plan (MTSIP) framework. The plan has an overarching goal of sustainable urbanization through initiatives such as Human Values-based Water, Sanitation and Hygiene Education (HVWSHE) and UN-HABITAT's engagement with universities to promote sustainable development.

Human Values-based Water, Sanitation and Hygiene Education (HVWSHE)

HVWSHE is a strategic entry point for bringing about positive attitudinal changes among both water consumers and providers, and in the longer term it can develop a new water-use ethic in society. Properly understood, it constitutes a comprehensive lifelong education, responsive to a rapidly changing world. It should prepare the individual for life through understanding of the major problems of the contemporary world vis-à-vis water, sanitation and hygiene, and the provision of skills and attitudes needed to play a productive role towards improving living conditions and protecting the environment with due regard to ethical values. The initiative involves integrating sustainability values into teaching on water, sanitation and hygiene.

In Africa, UN-HABITAT has been implementing HVWSHE in nine demonstration countries (Cote d'Ivoire, Cameroon, Mali, Niger, Burkina Faso, Senegal, Ethiopia,

Image: UN-HABITAT

Little girl using a public tap, Africa

Image: UN-HABITAT

Children going to fetch water, Asmara, Eritrea

Image: UN-HABITAT

Youth attending UN-HABITAT training, Liberia

Ghana and Uganda) as part of its Water for African Cities (WAC) Programme. The Expert Group Meeting held in Johannesburg, South Africa from 30 April to 2 May 2001 recommended the Human Values approach as a water education tool for African children and communities. The international and regional experts on water education, curriculum development and urban water resources management in the group observed that the introduction and implementation of this approach to water education, through formal, non-formal and informal channels of learning, is a promising strategy to bring about a positive and lasting change in attitude and behaviour towards water at all levels of society, especially through the use of the curriculum. The relevance of the approach to the education needs of African countries has been demonstrated by the positive response and commitment to project implementation expressed by educational experts in the six pilot countries. The remarkable results achieved by HVWSHE in Africa include:

- Water-related environmental education strategy for African cities
- Tremendous generation of interest in the project amongst both participating and non-participating cities
- Mainstreaming of HVWSHE in the curriculum
- Networking and collaboration between education and water sector officials
- Extension of HVWSHE to Asian countries (South-East Asia in particular).

In Asia, a similar initiative has been launched through the Water for Asian Cities programme of UN-HABITAT, a regional consultation that brings together participants from 20 countries of the Asia Pacific region, including 10 member countries of the South East Asian Ministers for Education Office (SEAMEO). One of the main results of the consultation is the adoption of a Joint Statement endorsing a value-based approach to water and sanitation education. Currently, UN-HABITAT has strategic partnerships around this initiative in India, Nepal, Lao PDR, Cambodia, Viet Nam and the People's Republic of China.

Similar projects are being initiated in several Latin American countries such as Mexico. In the context of the current global crisis, under which the fiscal space of governments in poor countries is shrinking, waste conservation and demand management offer opportunities to address waste, leakages and corruption, and to enhance equitable and efficient use of resources.

Habitat Partner Universities

Over the last few decades, there has been a dramatic increase in the number of universities and tertiary institutions addressing urban challenges. The majority of the world's universities are located in or close to cities and urban areas and, in addition to teaching and research, are committed to improving the accessibility of knowledge to the wider community. They create new knowledge, enhance understanding and help educate and train the next generation of urban practitioners in a range of disciplines. There is a recognized need to work collaboratively to achieve workable solutions for urban sustainability through inter-disciplinarity. Most universities face major challenges in ensuring that:

- Their curricula respond to the issues of urban sustainability
- Research responds to the priority of sustainable urbanization and generating ideas to meet challenges
- The knowledge and understanding generated in universities are made accessible to policy makers, practitioners and communities through proactive outreach services, ventures and partnerships.

The Habitat Partner University (HPU) Initiative is an emerging framework created to respond to this challenge. It aims at enlarging cooperation between UN-HABITAT and institutions of higher education, as well as facilitating exchange and cooperation between universities in developing and developed nations.

The initiative has expanded, with a growing number of universities joining. The HPU initiative enhances the opportunity to make the knowledge products and resources of universities accessible to policy makers,

Image: UN-HABITAT

Child washing hands in a public fountain, Africa

practitioners and communities. At the same time, the interaction between universities and cities is fostered, which in turn will inform universities' education and research agendas. UN-HABITAT has already signed letters of exchange with over 25 universities that have expressed interest in joining HPU.

Promoting new teaching methods

The HPU initiative promotes new teaching methods for sustainable urban development. In this context, a field course on urban ecological planning has been developed, with a strong focus on plans for the city of Kampala, Uganda. In 2009, a group of students from the Norwegian University of Science and Technology (NTNU) and Makerere University studied two slums in Kivulu and Acholi Quarters, districts of Kampala.

The Kivulu group of students helped organize a resident-driven construction committee, which jointly came up with improved modes of construction, using locally produced compacted bricks made by an interlocking stabilized soil bricks machine, which in turn would rely on local labour.

The Acholi group focused on local capacity development and prepared the community to identify projects of relevance with a long-term impact. At the end of the study, a revolving fund was established and operational within Acholi Quarters.

Learning from successful projects

In September 2008, Sorsogon City in the Philippines joined the Cities in Climate Change Initiative as the first Asian city, prompted by the increased number and intensity of tropical cyclones. A comprehensive participatory vulnerability and adaptation assessment was conducted, identifying vulnerable locations, populations and sectors. In a series of participatory meetings, including several city-wide consultations, climate change adaptation and mitigation options were agreed and prioritized based on the wider needs of the city. The city is now drafting a shelter plan and is revisiting its land use and sector development plans. In addition, a livelihood-strengthening strategy for the most vulnerable groups is being implemented, including shelter retro-fitting in accordance with revised building codes. The city has implemented 'win-win' energy saving measures and is strengthening its disaster preparedness plans. Lessons learned contributed to the Climate Change Act of the Philippines (2009), which is exemplary as it attempts to bring clarity to the institutional approach to climate change. It stresses the multi-sectoral dimension and emphasises the role of local governments in the implementation of the Act. Meanwhile, a vulnerability assessment tool has been developed to share the lessons learned in the Philippines.

The diversity of environmental, economic, social and planning issues, the participatory approach and the focus on city-driven (and hence low-cost) interventions made this an interesting project for university education. The case study has featured prominently at the Institute for Housing and Urban Development Studies, Erasmus University Rotterdam in two Urban Management Masters programmes as well as a dedicated Climate Change course. The University of the Philippines School for Urban and Regional Planning also uses the case study for its teaching, student research programmes and academic research.

Desertification is not about deserts: meeting drylands challenges through education

Luc Gnacadja, Executive Secretary, UN Convention to Combat Desertification

The encroachment of deserts on productive land causes desertification, but this is only a small part, not the main cause, of desertification. Desertification refers to land degradation in the arid, semi-arid and dry sub-humid areas due to various factors, including human activities and climate variations.

Together, deserts and other dry ecological systems are known as drylands. They occupy over 41 per cent of planet Earth. One in every three people lives in the drylands, as well as a significant proportion of the wildlife and half of the world's livestock. These figures suggest that it is impossible to achieve sustainable development while ignoring the drylands.

The sustainable management of the drylands today is essential for the eradication of poverty and the attainment of other internationally agreed development goals. The approach to land management advocated in combating desertification also enhances our ability to meet future global food demand, move excess carbon from the atmosphere into the soil and strengthen the resilience of rural drylands communities to climate change. Therefore, efforts to curb land degradation in the drylands — known as combating desertification — must be at the centre of the campaigns linked to the UN Decade of Education for Sustainable Development (DESD).

The basis for education initiatives to combat desertification

Established in 1994, the United Nations Convention to Combat Desertification (UNCCD)[1] is the sole legally binding international agreement linking environment, development and the promotion of healthy soils. The Parties to the Convention (193 countries and the European Community) seek to alleviate poverty in the drylands, maintain and restore the land's productivity and mitigate the effects of drought.

Each Party implements the Convention on the basis of its national action programme. This is the package of activities each country deems critical to addressing desertification, land degradation and drought (DLDD). The developed countries without any drylands provide support for the implementation of the action programmes. Although education is not prescribed as a requirement for inclusion in every programme, it is recognized as one of the priority fields for possible action under Article 10 paragraph 4 of the Convention, and as one of the supporting measures under Article 19.

At their 2007 Conference, the Parties adopted a ten-year strategic plan and framework to enhance the implementation of the Convention for the period 2008-2018 (the Strategy). Education is a priority objective of this Strategy. The Convention's educational messages seek to deepen understanding of issues of interest to the stakeholders so that measures to combat desertification, land degradation and drought become part and parcel of every country's development policy.

The Convention's primary focus is the drylands areas but its commitment to preventive measures, by promoting

Image: © Isselmou Ould Mohammed Hanefi & UNCCD 2009 Photo Contest

Desert encroachment is only a small part of the desertification story

Image: © Reza Deghati & UNCCD 2009 Photo Contest

Land degredation and drought are widespread

sustainable land management practices, makes it relevant for all countries. Moreover, the drivers of desertification are common to the drivers of land degradation elsewhere. Therefore, assessments of the cost of soil protection and restoration, as well as efforts to improve livelihoods and the ecosystems in degraded regions, are relevant to all regions.

Good practice in education

Through education about DLDD, we learn mundane things such as the nuances between deserts and desertification. We also learn how to address desertification and land degradation, and to mitigate the effects of drought in order to achieve sustainable development. Citizens from the non-affected countries that may view desertification as a distant issue learn how their lifestyles may cause or be affected by desertification and drought that is in faraway places. Land degradation, which refers to soil degradation, has far-reaching consequences for many realms of life as well. Sustainable land management is a powerful solution to many of the major challenges of our time, including deforestation, energy deficits, food insecurity and poverty. Citizens of drylands countries also learn how to cope better with these challenges.

Education about DLDD occurs through formal, informal and non-formal processes.

Formal training may be carried out during classroom instruction or indirectly by training teachers. For example, in Chile, the Government of the Netherlands financed an educational programme on desertification. A local non-governmental organization, Juventudes para el Desarrollo y la Producciòn (JUNDEP, which stands for Youth for Development and Production), trained teachers in the local Recoleta School in the land management of an area that was highly degraded through mining and inappropriate agricultural practices. Then, with the teachers, JUNDEP developed an appropriate curriculum for the school. Its activities included theoretical learning by the pupils and teachers, practical training through the establishment of a nursery and an aboretum, well drilling and maintenance of gardening tools, and reaping the rewards for these efforts through the sale of produce.[2]

To support such formal initiatives, the UNCCD, in cooperation with UNESCO, has produced a teachers' kit, 'Learning to Combat Desertification', for primary schools and a teaching resource kit for drylands countries to be used in secondary schools. The kit is used as a tool in the education initiatives under the DESD. It is available through UNESCO's Associated Schools Project Network (ASPnet) with a total of 8,000 schools in 177 countries.

Informal education initiatives are also part of the Convention's strategy. The UNCCD's informal education programme targets everyone from school-age children to adults. For example, Lupo Alberto, a cartoon book, educates young people on the importance of combating desertification. 'Gaia: the Game of the Earth', created by the Italian NGO, Ricerca e Cooperazione, is a board game for children aged 12 years and older. The Government of Italy financed both initiatives. In addition, the National University of Santiago de Estero, Argentina and a civil society organization, Fundación del Sur (South Foundation), designed an innovative education project on combating desertification, targeting women aged over 60 years without prior art knowledge. Participants in the project produced paintings under the theme, 'Environment Vision of El Chaco from the Visual Arts'. Story telling, workshops and seminars are the most common avenues for informal education.

The Convention promotes non-formal education by encouraging the transfer of indigenous knowledge and traditional practices across generations, through exchange visits and activities that involve communities.

Education initiatives on combating desertification are carried out by many other actors. For example, the Recoleta School project was part of UNESCO's education activities. Local communities, such as the Guédé-Chantier village in Senegal, have set up an eco-school programme that educates children to combat encroaching desertification.[3] The Africa Re-Greening Initiative is also supporting local initiatives to re-green the Sahel region in Africa.

Measuring the success of educational activities

In their biennial reports on the implementation of the Strategy, Parties to the Convention will report their performance in education activities. The first reports on this measure will be submitted at the end of 2010. Parties will state the number and type of educational initiatives relating to DLDD carried out by their civil

Image: © Gustavo Jononovich & UNCCD 2009 Photo Contest

Clearing land for agribusiness

Image: © Griselda Duarte & UNCCD 2009 Photo Contest

Land degradation is a global challenge

Image: © Chetan Soni & UNCCD 2009 Photo Contest

Water scarcity is a global challenge

Image: © Rodney Dekkeri & UNCCD 2009 Photo Contest

Sustainable land management is essential

Image: © Sebastian Gortari & UNCCD 2009 Photo Contest

Join the campaigns and make a difference

society organizations and science and technology institutions. The reports may include education initiatives conducted in the formal and non-formal education sectors. They will also be distinct from advocacy and awareness initiatives, each of which has its own performance measures.

Building on the DESD: a new decade dedicated to combating desertification

In 2007, the United Nations declared 2010-2020 the United Nations Decade for Deserts and the Fight against Desertification (UNDDD).[4] The purpose is to organize observance activities that will raise awareness about the causes of and solutions to ongoing land degradation and desertification. In declaring the Decade, the United Nations drew attention to two things: first, the deteriorating situation of desertification in all regions, especially in Africa, and second, its implications for the achievement of the Millennium Development Goals, more specifically, poverty eradication and environmental sustainability.

Similar concerns led to the declaration of the DESD. Therefore, linking the two initiatives can scale up the progress towards sustainable development and poverty eradication. DESD initiatives could incorporate substantive knowledge of land degradation in their education work. The UNDDD could design educational activities for its campaigns in cooperation with schools and youth groups. Such collaboration is essential, given the challenges in education among drylands communities.

For example, the results of an Annual Learning Assessment of children aged 6-16 years in Kenya conducted to assess "whether children are learning anything," and released in April 2010, found that, on average, children in the drylands areas are the least equipped with the basic skills needed for learning. More than half of the children in these areas lack the competence to read texts in either English or Kiswahili or to compute mathematics meant for children with only two years of learning.[5] Therefore, for the UNCCD to reach drylands communities, the expertise of the DESD in education programmes is essential. Similarly, the UNDDD needs to identify suitable content for the DESD campaigns.

Among the topics envisioned for the UNCCD educational materials are the feasibility of land restoration and soil health, the global benefits of land/soils, making the case for private sector involvement in sustainable land management, 'how-to' materials on solutions to the problem of land degradation, and 'training the trainers' packages for informal education programmes. In future, existing materials will be reviewed to improve the data and analyses.

Together, by pooling our resources, we can make a great difference in the livelihoods of people who live in the drylands and to their environments.

Researchers studying sustainable land and water management in drylands and many grassroots level success stories occurring on continents have provided the knowledge needed to successfully roll back desertification. So to a large extent, the key challenge we face is the sharing of required knowledge in order to scale up and disseminate the best options for success. And that is, indeed, an educational challenge.

Integrating sustainability in teaching and learning: the role of the Earth Charter

Mirian Vilela, Executive Director, Earth Charter International Secretariat, Earth Charter International

A key question emerging from the UN Decade of Education for Sustainable Development (DESD) is: what are the values inherent in sustainable development that could help us, as human beings, to realize the vision of sustainability? The Earth Charter[1] is a good answer to this question as it is the product of a worldwide, decade-long, cross-cultural dialogue on common goals and shared values. It was drafted by a civil society initiative and launched in 2000.

The Earth Charter reflects the consensus taking form in the emerging global civil society on universal values for sustainable development and can validly claim to represent a core set of shared ethical principles with a broad and multicultural base of global supporters. In the holistic sense promoted by the Earth Charter, sustainable development or sustainable ways of living require changes in both the hearts and minds of individuals, along with the reorientation of public policies and practices. Education is a key to advancing the transition to more sustainable ways of living, as it can help rekindle more caring relationships among humans and between humans and the natural world. It can facilitate the creative exploration of more environmentally and socially responsible forms of development. For this to happen, it is crucial to foster education that helps people understand the fundamental changes needed if sustainable development is to be realized.

The Earth Charter provides an integrated and coherent framework for developing educational programmes and curricula aimed at teaching and learning for a more just, sustainable and peaceful world. The integrated approach promoted by the Earth Charter emphasizes the relationships between the different challenges faced by humanity, ranging from the eradication of poverty to the protection of Earth's ecological systems and the elimination of all forms of discrimination.

It is important to recognize that the Earth Charter contains general ethical principles as distinct from rules. Rules tell one exactly what to do in a specific situation. General principles tell us what to think about when we are deciding what to do. It is also useful to keep in mind that we live in a complex world and there will at times be conflict between different ethical principles. For example, there is frequently a tension between individual freedom and securing justice for all. Likewise, there can be tension between the needs of present generations and the needs of future generations and between the short-term interests of people and the long-term health of ecosystems.

The Earth Charter is designed as a vision of global ethics, which can be used to promote ongoing reflection and dialogue across different cultural perspectives. Global ethics are urgently needed in the twenty-first century. All peoples live in an increasingly interdependent world. No group or nation can solve the major problems they face by acting alone. International and cross-cultural collaboration is essential. Effective collaboration requires common goals and shared values, and that means global ethics.

For the past ten years, a significant body of knowledge has been developed around the use of the Earth Charter in teaching and learning. Educators from all regions of the world have contributed to this body of knowledge, based on their practical experiences of applying the Earth Charter in a diversity of educational settings.

In October 2003, UNESCO adopted a resolution recognizing the Earth Charter as an important ethical framework for sustainable development. The resolution affirms Member States' intention to "utilize the Earth Charter as an educational instrument, particularly in the framework of the United Nations Decade for Education for Sustainable Development".[2]

In a collaborative effort, UNESCO and Earth Charter International put together a publication[3] with twenty-seven illustrative stories from countries around the world that share a common objective — to contribute to building sustainable societies using the Earth Charter as a tool for education for sustainable development. This effort was put in place with the hope of stimulating and inspiring new efforts to integrate the values of sustainability into education and into all educational settings across the globe. In addition, numerous resources have been developed to help teachers use the Earth Charter in education settings, such as a set of songs to use in classrooms, along with stories and teachers' guidebooks, which are all available on the Internet.

In order to ensure the transition to a more sustainable future, determination and collaboration will be needed to re-orient educational systems and practices to sustainability and this requires a special effort to:

- Shift away from a fragmented approach to education and learning to a more systemic and holistic approach
- Explore ways to work with transformative learning, which itself requires working with our senses and emotions
- Incorporate values and ethics of sustainability as a cross-cutting theme in all educational settings.

The Earth Charter Initiative is committed to dedicating significant efforts to this endeavour.

Unlocking the potential of ESD for green growth

Kang Sangkyoo, Korean National Commission for UNESCO

With the global economic turbulence and climate change, we are at a point where we must speak up about the need for change and our capacity for achieving it. Such change will lead us to take on economic, social and environmental issues in a more convergent manner, and thus compel education of all types and levels to become a tool for tackling the pressing challenges in view of global balance and local reality. A wide variety of problems are profoundly interlinked and a single possible solution will never fix them all at once. Education is a slow but ultimately crucial means by which to change the complex equation.

Our generation and those to follow are facing serious challenges, including financial crises, global warming, biodiversity loss, poverty and food and water shortages. United Nations Secretary-General Ban Ki-moon has called for a 'Global Green New Deal' to help rebuild and reshape the economy of our planet. World leaders argue that this crisis is a call to speed up the creation of a new energy economy. It is in this spirit that the Korean government announced Green Growth as a national vision that would shape Korea for the next six decades.

Korea's economy is largely dependent on external factors, including foreign oil and export earnings. Rapid economic growth since the 1960s has produced imbalance in environmental and social integrity. Military and diplomatic tensions between North and South Korea threaten political stability. Low birthrates and an ageing population will continue to feed chronic national vulnerability in the immediate future.

Green Growth was introduced in 2008 to promote the belief that growth and environmental sustainability are not merely compatible, but mutually necessary for the future of humankind. The government has already enacted the Framework Act on Green Growth and embarked on an official launch of the Global Green Growth Institute (GGGI) in 2010. While the Act serves as the guiding principle of development for Korea, the Institute is expected to become a platform through which Korea cooperates and collaborates with emerging and developing nations in their efforts to create and implement national and local strategies and policies for pursuing green growth. Seen in this light, the UN Decade of Education for Sustainable Development (DESD) in Korea has vast potential to be implemented in alignment not only with the priorities of the national sustainable development objectives, but also as part of global efforts for a sustainable common future.

Image: KNCU

The launch event of the ESD Colloquium Series focused on green and creative human resources

During the first half of the decade, the Korean National Commission for UNESCO has played a facilitating role for national implementation of education for sustainable develpoment (ESD) by organizing teacher training workshops and guiding publications. The Asia-Pacific Centre of Education for International Understanding (ACEIU), a UNESCO Category II Centre in Korea, has organized a series of EIU/ESD events, including in-service teacher training workshops, a photo exhibition and essay contests. In collaboration with UNESCO Bangkok and United Nations University respectively, it published *Two Concepts, One Goal: EIU and ESD* (2006) and *A Training Manual for EIU and ESD* (2008).

Looking forward to the second half of the decade, the Korean National Committee on ESD was launched in 2009 as a DESD national coordinating body. The Committee, composed of 20 members, brings together government bodies, educational institutes, university networks and representatives of different sectors of society. It aims to devise ESD policies at the national level by spotting and acting on ESD imperatives, as well as formulating a national ESD strategy.

There has been no statement from government ministries regarding their involvement in the DESD process. However, the Ministry of Environment introduced the Environment Education Promotion Act in support of sustainable development in 2008, and published an ESD resource book for teachers in primary education in 2009. The Ministry of Education, Science and Technology has paid attention to the strengthening of ESD by financing the operation of the ESD Committee and incorporating 'Environment and Green Growth' into the revision of the national curriculum for secondary education in 2010.

Despite the developments mentioned above, key constraining factors have also been identified and will need to be addressed during the second half of the DESD. First, the green growth strategy has brought about a new impetus for raising public awareness and promoting sustainability issues nationwide. However, it also came coupled with serious debate and skepticism. Some critics argue the government-driven initiative aims to achieve another economic breakthrough by advancing green technologies and greening its industry, claiming the tech-savvy framework is not inclusive or holistic enough to transform the past development model. In view of the DESD, moreover, the green growth approach still falls short of proving itself a catalyst capable of addressing the new role of education for sustainable development in response to global uncertainties and ensuing national risks in the immediate decades to come.

Second, a profound reorientation of existing education structures and programmes needs to be addressed for change in formal education in Korea. The current national curriculum is organized around too many academic subjects and is excessively centred on competition for college entrance. In hopes of prioritizing and promoting quality education at all levels, partners and stakeholders from diverse thematic areas need to work together to promote education for sustainability. In particular, with environmental issues still dominating ESD thinking and activities, the mobilization of high-level political will and inter-ministerial commitment is a demanding part of the efforts toward moving forward.

Third, a rapidly evolving communication network with educational potential has not fully mobilized. Like other countries in Asia, Korean society is being reshaped by the explosion of digital networks, such as blogging, e-mailing, text messaging and social networking. A to-do list of DESD action at national level has long included the construction of a website offering guiding documents, materials, research and activities at home and abroad. ESD researchers, experts, teachers and activists still do not have an online forum where they can exchange information and ideas on ESD practices. In this context, the second half of the DESD needs to tap into the potential of the digital fabric to harness demand-supply chains of ESD in non-formal and informal mutual learning. With unprecedented opportunities for local people to join in becoming increasingly interconnected and wired to

Image: KNCU

The Korean National Committee on ESD holds regular meetings to devise, review and coordinate ESD policies

Image: Inpyoung Elementary School

Students at Inpyoung Elementary School performing a role play in an ESD project class

Image: Tongyeong RCE

Tongyeong RCE saw participants in an ESD Camp produce an artwork made out of wetland plants

global issues at a distance, the online networks weaving individuals and societal trends can be organized as transformative agents for every economic and social activity.

The Korean National Commission for UNESCO began to hold the ESD Colloquium Series in a bid to tackle those impediments. The unifying theme for the 2010 Series is 'How shall Korea utilize ESD?' Each event, co-organized by the Commission and its partner institutions, intends to stretch the benefits and potential of ESD beyond the 'inner circle'. Thematic areas associated with the series include green technology, creative learning, local development, social integration and educational innovation. The series is designed to foster conditions for identifying and expanding the alliances for ESD in Korea, so that the ESD constituency reaches out to diverse stakeholders, including government, civil society, the private sector and academia.

More often than not, the Korean success story of realizing the principles and values ESD has to offer focuses on Tongyeong, a harbour city located in the southernmost part of the Korean peninsula. Tongyeong is a costal region of 138,000 people in an area of 240 square kilometres. Marine resources and cultural heritage are the focus of its economic activities, based on fisheries and eco-tourism. Providing all citizens with a quality education in support of generational equity and global justice has been deemed an imperative for prosperity and for the very existence of local society. Since being designated as a Regional Centre of Expertise (RCE) by United Nations University in 2005, the island has vividly illustrated how ESD can lead to dramatic changes in local education and people's lives.

An ESD model elementary school, Inpyoung, has integrated ESD into its curriculum and extracurricular activities through a whole-school approach. At first, teachers there had difficulty understanding the concept of ESD and finding where and how to start the teaching-learning process. After participating in workshops and forums offered by the RCE, however, they developed their own ESD syllabus by studying the local environmental, social and economic issues. Parents are also given chances to participate in school activities, such as the exhibition entitled 'Future of Our Town,' which saw parents, teachers and students all working together. In order to expand ESD within and outside of the limited numbers of model schools, the RCE has operated ESD programmes and activities that have a significant impact on local communities, in collaboration with 35 local educational NGOs. The efforts have led not only to sharing of the key principles, practices and values that are required for the city's sustainability among the local people, but also to bringing critical shifts in many aspects of educational programmes organized by those NGOs.

The main reasons for Tongyeong's outstanding success among many other RCEs worldwide include enduring financial and administrative backing from local authorities. People's active participation and subsequent feedback are also integral parts of the story. Encouraged by political and grassroots support, the RCE continues to plan the expansion of its ESD practises at all levels, from kindergarten to college, until 2012. While spreading and elaborating on educational projects, the city is preparing an ambitious scheme for the establishment of the Education for Sustainable Development Foundation and the RCE Eco-Park and Centre in an attempt to ensure the sustainability of the RCE itself. The Tongyeong case suggests that the widespread application of its best practices in broader parts of the country could eventually change our notions of cities, encompassing urban and rural areas. A city can be transformed by spurring education for a sustainable future into people's daily lives.

Our tomorrow will be different if educational endeavors like Tongyeong can be brought into the mainstream, contributing to achieving sustainable green growth in Korea and beyond. The beginning of change in this small city was made possible thanks to the proclamation of the UN Decade. However, history shows that even a little personal or social change is much more powerful than a big, swaggering political slogan. The DESD still has a long way to go if it is to achieve its aims and produce a strong case for ESD in the real world, not just in theory. In the end, the hope is that ESD will prove itself a sustainable form of future education and learning for the people of the whole world.

The private sector and education for sustainable development

John Fien, Professor of Sustainability, RMIT University, Australia and
Rupert Maclean, Professor of International Education, Hong Kong Institute of Education

To be effective, education for sustainable development (ESD) requires the participation of all sectors of society. Much work is being done around the world to integrate sustainable development into formal education, especially at the pre-school, primary and secondary school levels, in technical and vocational education, and in universities and teacher education. Non-governmental organizations (NGOs), governments and the mass media also play important roles in promoting general public awareness and understanding of sustainable development. Very important also is the development of training programmes to ensure that all sectors of society have the skills necessary to perform their work in a sustainable manner.

Ensuring that a company's staff and those of suppliers understand and are able to apply principles of sustainable development in the workplace is of direct relevance to the private sector. Indeed, many initiatives undertaken by businesses and their partners in the area of sustainable development and corporate social responsibility contribute considerably to education, training and capacity-building for sustainable development.

This is generally done through one or more of four approaches:

- Corporate training programmes for employees, to provide them with the capacity to achieve corporate sustainability goals
- Supply-chain focused corporate training programmes to ensure capacity to achieve corporate sustainability goals
- ESD programmes for the communities that form the constituencies for businesses
- Corporate support for ESD in schools, technical and vocational education colleges and universities.

Research by UNESCO's Asia-Pacific Programme of Educational Innovation for Development (APEID) has identified leading international examples of companies across all industry sectors engaging in innovative projects across these four approaches as they seek to use education and training to achieve various sustainable development goals, such as overcoming poverty, promoting gender equality, protecting the environment, tackling rural development and advancing cultural diversity and human rights.[1] These examples include:

Approach 1: Corporate training programmes for employees, to provide them with the capacity to achieve corporate sustainability goals

Munich Re: Environmental management is central to the induction of new staff at Munich Re, especially as staff numbers at the firm's Munich headquarters have risen by more than 40 per cent since 2000. Right from the start of their careers with Munich Re, trainee insurance specialists are familiarized with various aspects of sustainability to create long-term awareness and to enable them to use this knowledge and insight in underwriting. In addition, a total of more than 300 representatives from Munich Re's client companies have participated in a 'Knowledge in Dialogue' programme, which includes sharing knowledge about environmental protection, environmental risks and prevention strategies.

Air France-KLM: All new cabin crew and those seeking promotion to supervisory roles receive training on sustainable development issues, which are integrated into key professional curricula. Also, in South Africa, Air France-KLM has launched an HIV/AIDS awareness and intervention programme built around peer education and provision of information and skills with regards to HIV/AIDS to employees at all levels.

MyTravel Northern Europe: In 1996 launched a '100 Steps Towards a Good Environment' programme at its in-house hotel chain, Sunwing Resorts. If a hotel decides to implement the programme, all key personnel — maintenance, service staff, management, etc. — must undergo training on sustainable development issues.

Approach 2: Supply-chain focused corporate training programmes to ensure capacity to achieve corporate sustainability goals

Toyota collaborates with the Coordinating Committee for Automotive Repair (CCAR) to host a website called CCAR-GreenLink, which provides dealers with environmental information and compliance assistance related to requirements for the storage and disposal of their waste materials, ways to implement their own waste management programmes and other advice to help them operate their businesses in an environmentally responsible manner. Additional support is provided through a telephone hotline and newsletters.

Reebok organizes training workshops in its worldwide network of factories on issues such as strengthening compliance with standards for non-discrimination,

enforcing acceptable working hours, preventing forced or compulsory labour and child labour, and ensuring fair wages, freedom of association, non-harassment and safe and healthy working environments. Outside experts and NGOs are commissioned to help worker representatives understand their rights and to improve their communication and problem-solving skills.

IBM's hardware business units and procurement staff provide environmental education for key segments of the IBM supply chain, explaining the use of material declaration forms and their importance in manufacturing products which comply with regulations such as the European Union's RoHS Directive. IBM has also partnered with industry peers and the University of California, Santa Barbara Bren School to develop the initiative 'Environmentally Responsible Packaging: A Guideline and Certification Program for the Electronics Industry'.

Approach 3: ESD programmes for the communities that form the constituencies for businesses

Adaro Envirocoal's mining and port activities in South Kalimantan are supported by a community education and development programme that includes equipping schools and hospitals, staff training, and scholarships for high school, agricultural college and university study. Adaro also provides training and loans to support the establishment of farming and plantation activities, aquaculture, automotive and light engineering and local cooperatives. These are supported by a procurement policy optimizing the use of local goods and services, thus ensuring market viability in the initial phases of development.

H&M: In Cambodia, H&M organizes HIV/AIDS awareness and prevention activities, including health promotion sessions and training of 300 peer educators who provide education to 3,000 factory employees on the issues of HIV/AIDS and reproductive health.

BSH Bosch und Siemens Hausgeräte GmbH (BSH): In Germany, BSH organizes the Yolante Women Engineering Training Programme to prepare women for work in the field of engineering through mentoring and personal development programmes. In South Africa, BSH supports the Buskaid Soweto String Project, which provides musical training for students in classical music forms as well as their own compositions and interpretations of traditional and modern African forms. In Turkey, the firm has developed a highly trained rescue team to assist community organizations in developing skills for managing disasters and providing assistance to victims. Firefighters at the BSH Fire Department also hold training sessions for schools to raise public awareness of fire prevention techniques to improve safety at school and at home.

Approach 4: Corporate support for ESD in schools, vocational education and training and universities

BP's initiatives in the formal education sector range from projects to help schoolchildren learn about the environment in the UK, US and China to high-level academic work in Russia and China. For example:

- BP's signature programme in California and Texas, 'A+ for Energy', provides USD 2.5 million in grants and training to teachers for the enhancement of energy education and has reached more than 3,000 teachers
- In China, the Environmental Educators' Initiative (EEI) — a partnership between the Chinese Ministry of Education, WWF and BP — is embedding environmental education in China's national school curriculum through teacher training, pilot schools that test new materials and approaches and 21 environmental education centres at teacher training universities
- In June 2005, a 10-year, $16-million commitment was made to the BP Energy and Environmental Programme to provide education and training to emerging leaders in the fields of conservation and development.

HK Electric Holdings Ltd runs 'Education Tours on Renewable Energy' for students in Hong Kong in partnership with the Education and Manpower Bureau of the HKSAR Government under the School-Business Partnership Programme. HK Electric is one of more than 130 companies that deliver education on environment and sustainable development in this programme. Through visits to the company's wind station and exhibition centre on the Lamma Island of Hong Kong, engineers of the company educate secondary school students on the operation of windmills as well as the wider use of renewable energy.

Newmont Gold Australia's programmes in remote areas of Australia are based upon a sustainable and effective indigenous training and employment strategy. Newmont has developed a comprehensive programme of pre-vocational and mine access training, guaranteeing successful graduates jobs with Newmont upon completion. The programme also involves training in cross-cultural awareness to help provide a culturally safe work environment for indigenous employees, with the objective of creating a culturally competent and culturally safe work place.

From the examples described above, it is clear that educational initiatives are often targeted at issues of importance to particular industries. This is not surprising, given that the companies often want such initiatives to have a strategic fit with their line of business or particular issues that need to be addressed (e.g. supply chains, safety or the environment). Moreover, they are likely to have more skills at hand if they focus on areas where they have existing expertise.

Learning from successful initiatives

Whilst there are a number of initiatives around ESD across all industry sectors, what remains to be seen is just how effective these are and what types of training and education are actually most effective. It is important now to identify how training and education are actually delivered, both within organizations and along supply chains, and to investigate the most successful ways of educating target audiences for sustainable development in future.

Reaching young people with sexual and reproductive health and HIV information and services in Mozambique

Adolescent and Youth Programme in collaboration with the Mozambique Country Office, UNFPA

Much has been written on the topic of education as a major driver of sustainable development. It is this critical link that has given genesis to initiatives such as Education for All (EFA) and the UN Decade of Education for Sustainable Development (DESD) among others. The importance of education for sustainable development (ESD) is also reflected in agenda 21 and the Millennium Development Goals (MDGs). The education sector however, like other sectors, has not been immune to the brunt of AIDS which hinders its contribution to sustainable development and the MDGs.

The impact of the AIDS epidemic on the education sector may be felt in at least three ways.[1] Firstly, AIDS impacts the supply of teachers and other education sector professionals as a result of attrition and absenteeism.[2] Secondly, AIDS impacts the demand for education in terms of the total number of school-aged children as well as the number of children enrolled and staying in school.[3] Finally, AIDS impacts the quality of education in terms of reduced availability of experienced teachers and the additional costs of maintaining the educational system.[4] Conversely, education has also remained a key tool for the prevention of HIV transmission.

UNFPA's role in HIV prevention for young people

Young people remain at the centre of the AIDS epidemic in terms of rates of infection, vulnerability, impact and potential for change. They are disproportionately affected by the epidemic — young people aged between 15 and 24 years account for 40 per cent of all new infections.[5] As one of ten co-sponsors of UNAIDS, the United Nations Population Fund (UNFPA) works to intensify and scale up HIV prevention efforts through rights-based and evidence-informed strategies, including attention to gender inequalities that exacerbate the epidemic. Guided by its Framework for Action on Adolescents and Youth (2007), UNFPA facilitates the provision of comprehensive, gender-sensitive, life skills-based sexual and reproductive health education, including HIV prevention, for young people both in and out of school, as a means to sustainable development.

One key example of UNFPA's leadership in HIV prevention for young people comes from Mozambique, through Programme Geração Biz. Started in 1999, Programme Geração Biz is an evaluated, multi-sectoral initiative that effectively brings together the educational, clinical and community components of HIV prevention programming. It is a large-scale initiative that considers the complexity of HIV prevention and reflects the critical roles that multi-sectoral collaboration and youth leadership play in achieving results.

Mozambique country context

Mozambique faces a 'generalized' epidemic with an estimated HIV prevalence of 12.5 per cent in adults aged between 15 and 49, with a rate of 8 per cent in the north of the country and approximately 21 per cent in the southern provinces.[6,7] Catalysing factors for the increasing prevalence in the southern areas of the country include migration, limited access to health services, inadequate coverage of HIV-related issues in communities, and growth in multiple concurrent relationships and inter-generational sex.[8,9] Although there have been large-scale condom distribution efforts, condom usage still remains low.[10] Access to treatment is equally challenging, with antiretroviral treatment only reaching 24 per cent of those who needed it in 2007.[11]

Young people aged 10-24 comprise roughly one third of the country's population. The HIV prevalence rate amongst young people aged 15-24 years is 7.9 per cent, but the rate amongst young women in this age group is 11.1 per cent compared to 3.7 per cent for their male counterparts.[12] Prevalence rates begin to rise significantly from the age of 15 years for both sexes. There are two major groups among young people at risk of HIV exposure. The group aged 10-14 years includes young people who, if they are not educated about sexual and reproductive health (SRH), may be vulnerable to HIV infection when they become sexually active. The second group is 15-24 year-olds and the emphasis within this age group is on young women as they face higher risks due to various issues like inter-generational sex and gender disparities.

Programme Geração Biz background

The 1994 International Conference on Population and Development resulted in an increased interest in adolescent sexual and reproductive health issues and led to the creation of the Inter-sectoral Committee for the Development of Youth and Adolescents (CIADAJ) in Mozambique. The Committee's assessment concluded that young people could not be treated as a homogenous group and that a multi-sectoral intervention was the best way to address their varied needs at scale. Programme Geração Biz emerged in 1999 from CIADAJ, with funding from UNFPA and Danida (Danish

Map of Mozambique

Source: United Nations. (The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations)

Development Agency), and technical support from Pathfinder International. The programme began as a pilot in two provinces — Maputo City and Zambezia — but now covers all 11 provinces in the country.

What is the programme?

'Geração Biz' means 'dynamic and energetic generation' — a name chosen for the programme by young people themselves to reflect a generation actively involved in finding solutions to their problems. It has been described by some young people as a philosophy of life inspiring them to be active and dynamic.

Programme Geração Biz aims to address young Mozambicans' need for knowledge and skills related to sexual and reproductive health and HIV prevention and treatment. The programme, which also aims to promote gender awareness, reduce incidence of unintended pregnancies and unsafe abortion, and reduce vulnerability to STIs, including HIV, represents an important contribution to the social dimension of sustainable development.[13] Since its inception, Programme Geração Biz has reached more than four million young people, both in and out of school, with seven thousand peer educators present in the schools and communities.

The core objectives of the programme are:

- To promote an enabling environment for informing, educating, changing behaviour and providing services to young people through public policy and information at community, provincial and national levels
- To provide information, education and counselling to young people in schools and communities to improve knowledge, skills, behaviour and practices with respect to SRH
- To ensure quality youth-friendly health services are accessible to youth in schools and the community
- To strengthen the capacity of ministerial agencies and their civil society partners to plan, implement and monitor activities
- To strengthen multi-sectoral coordination
- To ensure gender recognition and promote gender equality as a fundamental component of all activities.[14]

Themes of the programme

There are four strategic themes that aim to guide all programme activities.[15] These are:

- *Multi-sectoral strategy*: Programme activities implemented by all three sectors, (education, youth and sports, and health) from the central to the community level, based on the understanding that young people are a heterogeneous group, needing not only information but also services
- *Institutional capacity-building*: Developing skills, instruments, infrastructure and systems to build the institutional capacity for information provision and service delivery by and for young people
- *Advocacy*: Advocating for the rights and needs of young people at all levels, from the national level to grassroots advocacy activities of peer educators
- *Service provision*: Dissemination of knowledge and skills supported by services for young people.

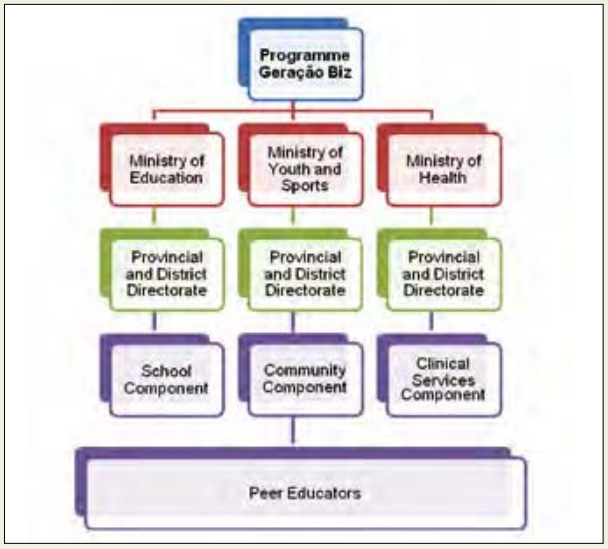
The three components of Programme Geração Biz are school, community and clinical services.[16]

The school component provides a platform to reach young people in formal education. Activities include lectures during classes, at break time, after school and in youth corners, all run by volunteer peer educators and supported by teachers. These activities educate young people about sexual and reproductive health, including HIV prevention, using various behaviour change communication (BCC) materials. While lectures, group discussions and theatre are undertaken as group activities, youth-friendly corners are used for individual counselling. At the end of 2007, a policy was approved ensuring space and free enrolment for all Programme Geração Biz peer educators in schools that maintain a high standard of performance. This policy improves retention of educators, reduces costs to families, and increases the probability of girls staying in school.

At the end of 2009, the school component was being implemented in approximately 624 schools in all provinces of Mozambique. There were 3,709 peer educators at the centre of implementing activities in the schools and 1,098,516 young people have been reached through this component since the programme's inception.[17]

The community component: With a national literacy rate of 47.8 per cent, many young people are not part of the formal education system in Mozambique, making the

Programme Geração Biz - Structure



Source: BBC World Service Trust

Image: UNFPA, Mozambique

World AIDS Day, 1 December 2007. Participants in a cycling event from Niassa to Maputo to raise HIV awareness

community component of Programme Geração Biz pivotal in reaching young people.[18] At the community level, peer educators provide educational materials and communicate messages through theatre, dance, video sessions, audio sessions (using radio soap operas as stimulants), group discussions and football matches. These activities usually take place in populated, open community spaces, such as markets. Peer educators also undertake door-to-door campaigns to address individual queries from young people. In some areas, peer educators target specific groups, such as truck drivers in the border areas or taxi drivers in the city.

By the end of 2009, a total of 1,366,524 young people had been reached by the community component and a total of 441 youth associations were involved in programme activities.[19]

The clinical services component: The school component and community component both raise awareness and focus on provision of information. The clinical services component provides access to sexual and reproductive health services through youth-friendly health services called *Serviços Amigos dos Adolescentes e Jovens*, popularly known as SAAJ, under the Ministry of Health and integrated within the national health care system. Peer educators and health professionals offer young people psychological support and counselling on relationships, contraception, condom use, STIs and HIV testing. Lectures and debates are run by peer educators in clinic waiting rooms around issues relevant to young people and related to sexual and reproductive health. The health practitioners are also trained to be sensitive to, and competent in, dealing with the health needs of young people. Two pilot initiatives that have been launched recently as part of Programme Geração Biz are provision of antiretroviral treatment to young people through the youth-friendly health services and programme initiatives targeting key populations of young people with a higher risk of HIV exposure, including prisoners, sex workers, people with disabilities and men who have sex with men.[20]

At the end of 2009, 244 youth-friendly clinics in Mozambique had reached 300,000 young people. Voluntary counselling and testing (VCT) services are already available in at least 117 of the clinics.[21]

The pedagogical diversity of the three components described above shows how an ESD programme like Geração Biz contributes to tackling an important sustainability issue by increasing the quality of education in formal and non-formal settings.

Gender issues

Programme Geração Biz takes a gender-sensitive approach in all its activities. All programme material developed is gender sensitive and challenges sex-role stereotypes. Implementing partners have also benefited from, and been enriched by, the programme. Some youth associations and partner organizations claim that Geração Biz has helped improve their understanding of and attitude towards gender issues. Gender disparities are a challenge due to traditional sex roles and females being responsible for the majority of household chores. Attempts are being made to address these with increased parental involvement.

Partners and their roles within the programme

Geração Biz is a multi-sectoral programme supported by the government, a number of national and international NGOs, youth associations and other civil society groups. Partners at the central, provincial and district levels are involved in planning, implementation, monitoring and evaluation of the programme. The implementation varies by province but a fundamental principle of Geração Biz is that young people should participate at all stages of the programme, from planning to implementation and evaluation. The main partners and their roles are as follows:

Government Ministries: Each of the three participating Ministries (Education, Health, Youth and Sports) is

Image: © BBC World Service Trust 2010

A peer educator with a young woman at one of the youth-friendly health clinics in Maputo City

Image: UNFPA, Mozambique

Newly qualified peer educators awarded certificates after a week long training course at a Roman Catholic Church Youth Centre in Bairro, Unidade 7, Maputo City

involved in joint planning with inputs from NGOs, youth associations and other civil society groups.

UNFPA manages the programme's funding and, through its staff in each of the 11 provinces, supports the government in its planning processes. UNFPA does not play any part in implementation but plays a supporting role in monitoring and evaluation, handling the programme database.

Pathfinder International provides technical support to each Ministry on planning, monitoring and evaluation, and has produced all BCC materials used. This organization also provides support for implementing partners, including all youth associations. Currently Pathfinder International is phasing out of Programme Geração Biz but still remains a part of the multi-sectoral coordination committee.

Youth associations: In Maputo City and Zambézia, the youth associations play a leading role, while in the other nine provinces, Programme Geração Biz is managed and coordinated by government department directorates directly with support from youth associations. Some youth associations have been with the programme since its inception. They also support the government in identification of young people's SRH needs and other related areas.[22]

Donors: The programme is financially supported by the Governments of Denmark (Danida), Norway (Norad) and Sweden (SIDA).

Principles for good practices in joint programmes and ongoing coordination

Programme Geração Biz provides lessons for managing a comprehensive national, multi-sectoral programme addressing the SRH needs of young people, including HIV-related information and services. These include:

Offering a comprehensive response using a multi-sectoral approach if required

It is imperative for a comprehensive response designed to offer information and services to young people to consider a coordinated multi-sectoral approach where partners play a complementary role for nationwide coverage of a programme. No single sector can address all the needs of young people.

Being gender-sensitive in programme design

Any programme that is gender sensitive may alleviate gender disparity by providing opportunities for advancement that are conducive for females, creating and providing equal opportunities for participation irrespective of sex.

Empowering young people to be the drivers of the programme

The focus on engagement with young people should be the ethos underlying any programme, creating opportunities for engagement at all programme stages.

Establishing separate monitoring and evaluation

Monitoring and evaluation are often merged together as a single function. However, it is important to make the distinction between the two activities. Monitoring should focus on process indicators and outputs, while evaluation should focus on summative indicators to determine outcomes and impact.

Creating a common mechanism for stakeholders to coordinate

A common mechanism, platform or a body for all partners to coordinate can help in ensuring efficiency and effectiveness for joint planning, implementation and a standardised monitoring and evaluation process.

Emphasizing 'young people' to coordinate and de-emphasize differences among stakeholders

Young people should remain the focus of the programme throughout. In case of any differences between stakeholders, the decision should be driven by what will succeed in engaging young people and help make the programme relevant to them.

Promoting education for sustainable development in China

Shi Gendong, Executive Director, and Wang Qiaoling, Academic Secretary,
National Working Committee for the UNESCO Project on ESD in China

As all governments around the world attach great importance to sustainable development, education, which is a driving force to promote sustainable development, has become the subject of common understanding in the international community. This understanding is fully expounded in the International Implementation Scheme of the UN Decade of Education for Sustainable Development (DESD), which recommends that education for sustainable development (ESD) be an important vision guiding educational reform and development across the world.

While implementing a strategy of sustainable development from the viewpoint of scientific development, China has since 1998 made remarkable achievements in ESD research and practical exploration by carrying out ESD activities in Beijing and some other municipalities, provinces and autonomous regions of China. All these activities were organized and instructed by the Beijing Academy of Educational Science under the leadership of the UNESCO China National Working Committee and the Ministry of Education. In order to sum up successful experiences of ESD, the Central Committee of the Communist Party of China (CPC) and the State Council have recently co-issued the National Long- and Mid-term Educational Reform and Development Program (2010-2020), which clearly defines the importance of ESD and makes it a thematic strategy for China's long-term educational reform and development.

Image: Nat. Comm. UNESCO China

Chinese delegates attend a world conference on ESD in Bonn

Theoretical research is the driving force to promote ESD

The first creative characteristic of ESD in China is that it is regarded as a driving force to guide educational science research to deepen the practice of ESD in China.

Defining the theoretical implications of ESD

To help Chinese educational workers to better understand ESD and guide their work, the research workers of the China National ESD Working Committee have arrived at a basic definition of ESD after many years of experimental work: "ESD is a kind of education introduced to meet the needs of sustainable development with cultivation of a value of sustainable development as the core". It aims to help those being educated to mould values by learning scientific knowledge, to strengthen learning capacity and to create a lifestyle, which meets the needs of sustainable development. On this basis, it further promotes sustainable development of society, economy, environment and culture. According to this definition, the concept of sustainable development education should be defined in the following four ways:

- Sustainable development education is a product of the times
- The core of ESD is the value placed on education
- Sustainable development education should focus on enhancing the overall values of students, scientific knowledge, learning ability and lifestyle
- The social function of ESD is to promote social, economic, environmental and cultural sustainable development.

Elaborating theoretical relations between education and sustainable development

Research workers on ESD projects have elaborated the theoretical relationship between education and sustainable development in China, namely, education occupies a strategic position of top priority in sustainable development, ESD itself is an important part of sustainable development, and ESD is the 'mission of the age' during the 21st century.

Image: Nat. Comm. UNESCO China

Presentation at an exchange conference on the social action project: 'Energy Saving and Emission Reduction and Schools of Sustainable Development'

Sustainable development requires changes to the content of education in the new century. Implementation of ESD requires education to accomplish its mode change to meet sustainable development needs. Its main tasks are:

- Orienting education reform
- Promoting capacity-building for sustainable development in education reform
- Promoting education reform to meet the requirements of sustainable development
- Researching ideological education reform to meet the need to build a new ethic of sustainable development
- Building schools into ESD educational setups and pilot bases to promote school building on the basis of the idea of sustainable development
- Developing education from habitual practice to scientific creation and discussing and putting in place education reform through scientific development.

In other words, it is necessary for China's education to make more contributions to the development of humankind through promoting ESD, since ESD is a key theme of education that faces the whole world .

Expounding the importance and basic meanings of values in sustainable development

UNESCO's UK Education for Sustainable Development Coordinating Group and Forum has defined the DESD as having respect at its centre: "respect for others, including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit". The basic concept of respect for others includes three principles: first, taking humanity as its base; second, harmonious all-round human development as the final goal of sustainable development (SD); and third, respecting the present as the necessary condition for respecting future generations.

Respect for difference and diversity includes the following four principles: first, respect for difference as the motive force of SD; second, biodiversity protection as the material base of SD; third, carrying forward local culture as the important pre-condition of SD; and fourth, respect for cultural diversity as the spiritual impetus of SD.

Respect for the environment includes respect for biological survival and for environmental protection as a human responsibility. Respect for the resources of the planet we inhabit includes two principles: that saving resources is the basic behavioural criterion of SD lifestyle, and that the cyclical economy is a model of SD.

Public education policies are made on the basis of conducting scientific educational research to promote ESD

The second creative characteristic of ESD in China is that scientific research should guide and gradually promote the making and implementation of public policies of ESD.

The ESD project group in China has attached great importance to basic contradictions and problems raised in practical activities over the past ten years or more. Through investigation, literature research and experimental studies, they have achieved positive results and evaluated them through assisting more and more experimental schools to work out and put into practice plans for ESD and on this basis, effectively helped governments at different levels to stipulate public policies for ESD which, in return, have further promoted the establishment of good external environments and favourable spaces for broad development of ESD.

On the basis of successful experiences in organizing and guiding the experimental schools to carry out ESD projects across the country, the group has seized historical opportunities, such as when the government of Beijing re-oriented the functions of Beijing Municipality in the city development plan, and the central government re-formulated the National Planning Program. Members of the group have organized expert groups and principals of some ESD experiment at schools to put forward proposals and suggestions to the State Council and the Beijing government on three occasions, clearly pointing out that ESD should be put in place in the national and Beijing educational development strategies and governments. Now ESD is part of the National Planning Program, which signals a shift into the national public educational policy from a scientific educational research project.

Regional educational reform and renewal should be pushed forward to meet the needs of local sustainable development

The third creative characteristic of ESD in China is that China has actively formulated ESD plans, regulations

Image: Nat. Comm. UNESCO China

Materials on environment and ESD for Beijing primary and middle schools

Image: Nat. Comm. UNESCO China

ESD content is being expanded in existing curricula

and legal documents to promote the creative process of ESD to meet the needs of the local socio-economic environment and culturally sustainable development.

For many years, the ESD project group has helped local education authorities to clearly understand the local educational situation and development plan, and to discuss and analyse what kinds of education are badly needed to meet the sustainable development of local societies, economies, environments and cultures. The group has also organized educational experts to conduct research and design ESD programmes to benefit regional educational development; and developed their respective focuses on promoting ESD in accordance with their different situations, with the aim of carrying out ESD projects more effectively.

Curricula and teaching methods should be constituted with distinctive features of ESD

The fourth creative characteristic of ESD in China is that of using the idea of sustainable development to examine and rethink the advantages and disadvantages of existing curricula and teaching methods in an attempt to constitute new ESD curricula and teaching methods with distinctive Chinese features.

At present, the UNESCO China National Working Committee has instructed both teachers and students to jointly tap relevant ESD knowledge in the existing textbooks of different disciplines. The committee has compiled a book entitled *Implementing ESD in Discipline Teaching* and guided teachers to expand ESD content in the existing curricula. The project group has also stuck to the teaching principle of "exploring the main disciplines by comprehensive infiltration and cooperative research to gain knowledge for the sake of application".

The project group has clarified the target positioning of ESD in local curricula and textbooks — environment and ESD for Beijing primary and middle schools — and about 300 local school textbooks are now widely used in some 1,000 primary and middle schools in Beijing.

ESD demonstration schools should be established in combination with energy conservation and carbon reduction

The fifth creative characteristic of ESD in China is that China has established energy-saving and emission-reduction schools while promoting sustainable development ideas, which has helped transform schools from resource-consumption into energy-saving and emission-reduction sample bases while raising the students' awareness of solutions to the problems that occur in the process of sustainable development.

The UNESCO China National Working Committee has launched a social action project, 'Energy Saving and Emission Reduction and Schools of Sustainable Development' in Beijing and some other provinces and cities. Through carrying out such activities as learning actions, creation actions, supervision actions and talk actions, we have raised teenagers' awareness of energy saving, emission reduction and sustainable development, and organized teenagers to participate in technical renovations. The project group has also mobilized the students to care about and take part in activities to create energy-saving and emission-reduction families, communities, enterprises and organizations and instructed the primary and middle school students to put forward proposals and suggestions to local government. In this way, a large number of schools, teenagers and teams have become energy-saving and emission-reduction pace setters.

Image: Nat. Comm. UNESCO China

The Second International Forum of Education for Sustainable Development

Developing multi-level international-Chinese exchange and cooperation in ESD

The sixth and final creative characteristic of ESD in China is that China attaches great importance to the localizing and implementing of international ESD conception and experience exchange in this regard between China and foreign countries. China also pays great attention to the promotion of ESD in its educational and teaching reforms in schools and joint cooperation between schools and social organizations in promoting ESD in China.

China started carrying out ESD projects more than 10 years ago with the aim of accomplishing steady localization of international ESD concepts in the country as soon as possible. Inter-regional and inter-school experience exchange activities were conducted at appropriate times. In the past decade, the ESD project group has hosted nine national workshops in Beijing, Shanghai, Guangzhou and Hong Kong. It also launched four ESD international forums in Beijing in 2003, 2005, 2007 and 2009 under the themes of 'Toward the UN Decade of Education for Sustainable Development', 'Education Promotes Sustainable Development: Global Common Understanding and Local Practice', 'Creative Practice of Education for Sustainable Development' and 'ESD: International Development Trend and China's Practical Mode'. These four international forums have effectively promoted the interaction and coherence of China's ESD with international experience and raised China's ESD impact in the world.

In addition, China has also made greater efforts towards carrying out educational and teaching reforms and deepening cooperation between schools and social organizations, in support of China's important policy of pushing forward all-round ESD. Approved by the UNESCO China National Committee in 2002, the National ESD Working Committee has so far invited leading officials in the sectors of environmental protection, economy, science, culture and public health to take part in the committee's work. These senior officials either took responsibility for important work or gave special reports at the national workshops and international forums. Representatives of a number of higher education institutions, enterprises, non-governmental organizations and rare and precious animal and plant reserve zones are invited to be permanent members or council members of the Beijing ESD Association, the first civilian ESD social organization in China to be approved by the Beijing Municipal Bureau of Civil Affairs in 2004.

Establishing enriched learning in Japan: participation and partnership

Nobuo Fujishima, Secretary-General, Japanese National Commission for UNESCO, Ministry of Education, Culture, Sports, Science and Technology, Japan

The Government of Japan has been promoting ESD in cooperation with relevant stakeholders since the establishment in 2006 of Japan's Action Plan for the United Nations Decade of Education for Sustainable Development (DESD). Following the midpoint of the DESD, we would like to introduce Japan's efforts to promote education for sustainable development (ESD).

Features of ESD in Japan

Even before the start of the DESD, activities addressing participatory, problem-solving learning had been conducted, not only in schools, but also in institutions of higher education, social educational facilities, communities and enterprises in Japan. Efforts are being made to advance this approach in diverse educational fields, including environmental education, human rights and welfare education, peace education and development education, while incorporating environmental, economic and social perspectives.

These have evolved into actions for partnerships and ESD integration initiatives that are taking root in communities and developing into efforts to build sustainable communities by linking the wisdom of traditional lifestyles with natural, industrial and cultural resources and also with the school curriculum.

In line with the development of ESD, these activities are increasingly pursued through partnerships involving schools, community centres and other local government bodies, non-governmental organizations (NGOs), non-profit organizations (NPOs), institutions of higher education, enterprises and others.

These activities have had positive outcomes — ESD in school education has led to the cultivation of 'zest for living' and ESD rooted in local communities has proved a powerful tool for building and revitalizing communities. It enables residents to discover the qualities of their community, nurtures affection for and pride in the community, and raises people's awareness as members of the community.

Building an action framework

Establishment of the Interministerial Meeting on the DESD

The government established an Interministerial Meeting[1] within the Cabinet in December 2005 to strive for close coordination among administrative bodies concerned with implementing the measures related to the DESD and to promote the effective and comprehensive implementation of these measures.

The Interministerial Meeting drafted Japan's Action Plan for the DESD in March 2006, stating that ESD implementation should favour:

- Programmes leading to community building
- Diverse places of education and implementing actors
- An integrated approach under various agendas
- Learning from participation and experience
- Nurturing abilities for social participation
- Coordination and collaboration between diverse actors.

With the related ministries and agencies steadily carrying out various measures stipulated in the Action Plan, the government, by keenly promoting ESD, aims to create a world where everyone may enjoy the benefits of high quality education and learn the values, actions and lifestyles required for a sustainable future and social changes, and where every organization may participate in the creation of a sustainable society.

Based on the Action Plan, the government has facilitated discussions on measures for implementing ESD by holding roundtable meetings since 2007 as forums for the exchange of opinions among academic experts, educators and related representatives from NPOs and enterprises.

Primary and secondary education

In 2002, periods for integrated study were incorporated into the primary and secondary curricula to provide time for schools to pursue their own creative and distinctive educational activities, suited to their particular locales and students' needs, and to enable children to learn about issues that span multiple traditional subjects, such as international understanding, information technology, the environment, and health and welfare. Issues relating to the environment and international understanding are also addressed in individual subjects such as science and social studies, and various educational programmes are being taught in schools in line with the principles of ESD.

During the periods for integrated study, children learn through experience about nature and day-to-day life and how they relate to industry and society, using topics such as the local countryside, rivers, traditional foods and festivals as their subject matter. These study periods also provide them with opportunities to explore how society can be made more amenable to diverse people through interaction with elderly people, foreigners and people with disabilities in the community. A feature of these activities is that they are enriched by the cooperation of local people, NPOs, facilities, businesses, universities, and institutes for community education.

Image: Japanese Nat. Comm. for UNESCO

ESD practice in the ASP, Omose Elementary School

In order to further entrench the concept of ESD, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) sees UNESCO's Associated Schools Project Network as a hub for promoting ESD. The Network aims to realize the ideals of UNESCO and to promote peace and international collaboration through classroom practice. Therefore, MEXT is working to increase the number of associated schools.

The main pillars of ESD in UNESCO's Associated Schools Project Network are education in international understanding and environmental education. Japan hopes that, by increasing the number of associated schools and strengthening the network among them, schools will be encouraged to share and reinforce their activities in collaboration with businesses and NPOs, enabling ESD to take root in their communities.

At the same time, a number of ministries and agencies are working together to develop and renovate school facilities to make them more environmentally friendly and to promote environmental education through this process, while the Ministry of the Environment (MOE) is taking action to encourage environmental education involving community leaders and children, eco-club activities to promote environmental conservation, and environmental education activities in extracurricular programmes.

ESD practice in the Associated Schools Project Network

Development of global vision through joint learning with overseas partners (Omose Elementary School)

This initiative uses the waterfront environment shared by the participants' communities in Japan and in the United States as a topic to encourage the development of children's sensitivity and scientific curiosity about the natural environment through such experiences as observation, investigation, fieldwork and raising animals. Information technology is used to enable learning exchanges with elementary schools in the US, fostering children's global outlook and laying the basis for positive environmental action.

Linking different subjects for integrated learning

An initiative at Shinonome Elementary School links children's learning on themes such as shopping, water and garbage to related subjects, such as Japanese language, social studies, science and periods for integrated learning. The purpose of this is to promote

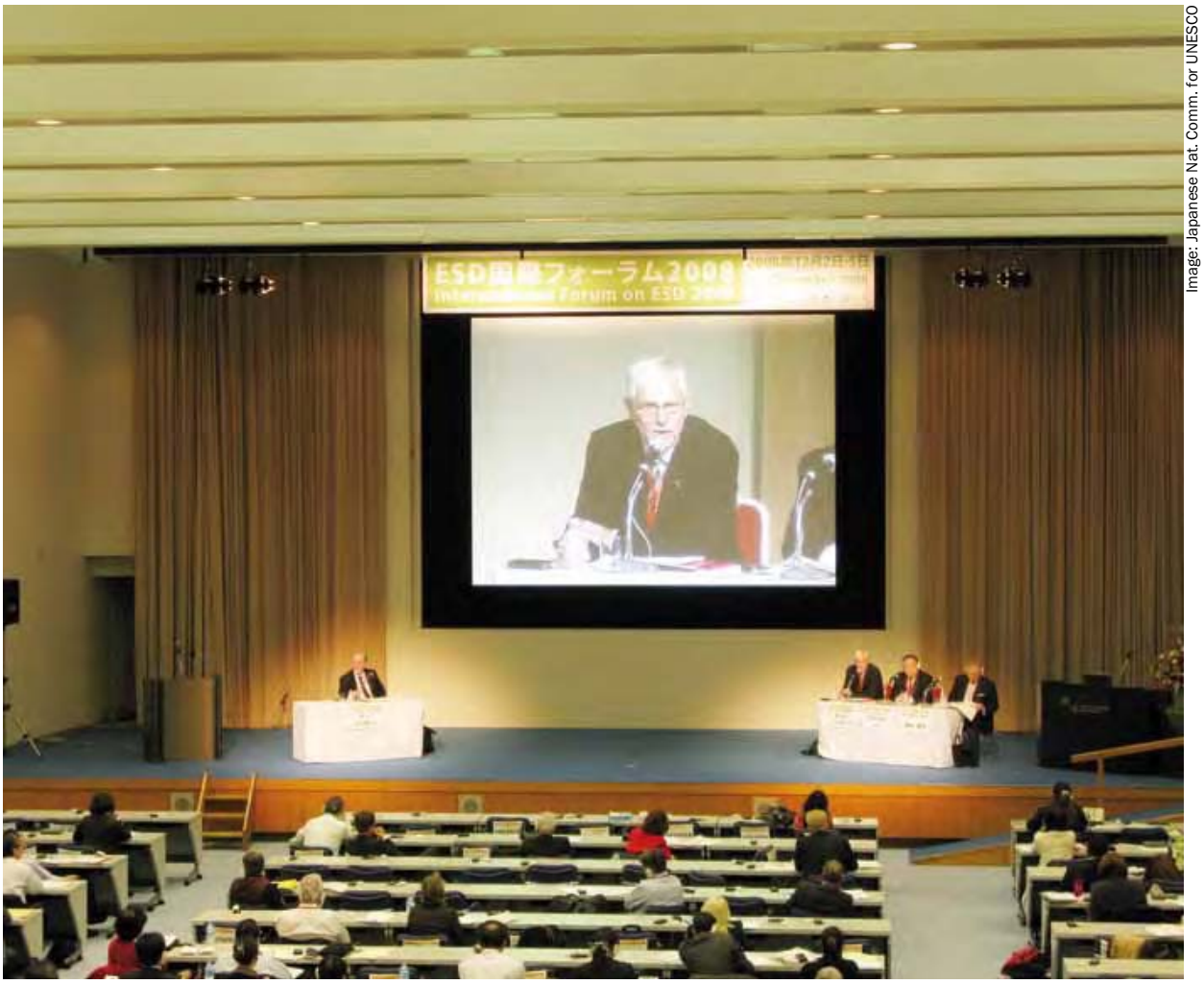


Image: Japanese Nat. Comm. for UNESCO

International Forum on ESD Dialogue 2008

problem-based learning and expand horizons from the local to the global level.

International action to promote ESD

The Government of Japan has contributed to the development of ESD around the world through its promotion, in collaboration with UNESCO, of the development and expansion of frameworks for the spread of grassroots ESD, including UNESCO's Associated Schools Project Network and RCEs, by contributing funds to UNESCO and the United Nations University.

MEXT contributes funds-in-trust to UNESCO to promote ESD and is engaged in international exchanges and cooperation projects, through which both Japan and UNESCO address challenges such as the development of sustainable societies and the human resources of the future, to further promote ESD.

Activities are also beginning at the grassroots level in the private sector. In Asia, such action includes:

- The collection and sharing of information on examples of practice for the Asia Good ESD Practice Research Project (AGEPP)
- Exchanges between communities engaging in ESD
- The provision of support for ESD strategy, planning, preparation and implementation in collaboration with UNESCO and governments and NGOs in the Asia-Pacific region by the Asia-Pacific Cultural Centre for UNESCO (ACCU).

Example of ESD practice

Activities of Regional Centres of Expertise on Education for Sustainable Development

The United Nations University introduced the concept of Regional Centres of Expertise on Education for Sustainable Development (RCEs) in 2004. RCEs comprise a network of existing formal and informal educational institutions for promoting the spread of ESD in communities and regions. These networks consist of diverse stakeholders in various sectors and provide forums for discussion, cooperation and information sharing to promote ESD. At the same time, they serve as knowledge bases for the accumulation of information and experience to support ESD activities. Since the establishment of the first seven RCEs

in July 2005, the RCE network has continued to expand, and 77 regions around the world were registered as RCEs as of September 2010.

Japan's message to the world

Achievements of the first half of the decade

During the first five years of the DESD, the Government of Japan laid the groundwork for partnership between the public and private sectors. In addition to creating an organization of government ministries and agencies to promote ESD goals, it drafted a domestic action plan, organized round-table discussions to serve as a venue for dialogue among the organizations concerned, and implemented various measures.

A major achievement of this period was the affirmation of ESD's status as an important government policy in such plans as the Basic Promotional Plan for Education and the Twenty-first Century Environment Nation Strategy. Moreover, the creation of a sustainable society was included as a topic to be addressed in all subjects in MEXT's revised courses of study, and lessons reflecting the principles of ESD became part of compulsory education.

A practical model for implementing ESD concepts at the regional level and in institutions of higher education has been developed, and the Associated School Project Network, RCEs and other networks for implementing ESD programmes are growing. Regional networks to promote ESD established as a result of private-sector initiatives have also been spreading.

Challenges ahead

Though progress has been achieved in disseminating ESD, continued efforts must be made to reach as many people as possible. In undertaking this task, a straightforward explanation of what ESD entails should be provided, while taking into account its connection with ongoing educational activities being undertaken locally.

Closer partnerships among government ministries and agencies and other groups are vital for promoting ESD, and efforts must be made to strengthen the system for cooperation and to implement policies toward this end. Other remaining tasks include raising the status of ESD in government policies and taking a more comprehensive approach that incorporates ESD principles in teaching individual topics on the environment and international understanding.

Fostering closer alliances

The government will promote ESD in primary and secondary schools and introduce it into teacher training courses and training programmes for teachers when they renew their teaching licences. It will also take steps to promote joint community-school ESD initiatives, including school and community support headquarters and stakeholder conferences.

To promote ESD in higher education, collaboration among universities and various sectors will be fostered through the expansion of the environmental graduate school network, the formation of a consortium among industry, government, academia and civil society, and other measures.

At the community level, the government will support partnerships among and initiatives by individuals and organizations in the community, such as forums to promote ESD. It will also encourage development and promotion of ESD programmes at public halls, civic centres, children's centres, libraries, museums and other social education facilities. Steps will be taken to train and deploy coordinators to promote ESD in the community.

At the global level, there will be efforts to further expand UNESCO's Associated School Project Network, RCEs and the Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net) initiative.

Towards the global promotion of ESD

It is important to create a scheme to facilitate the participation of and partnership among various individuals and organizations at the national and local levels and to train ESD coordinators in various regions so that ESD can be promoted by coalitions of diverse individuals and organizations.

The promotion of ESD principles that are rooted in the community and that can bring about change will be dependent on the creation of a system that encourages the use of local resources, including natural, cultural, historical and industrial resources. It will also require the development of participatory, experiential and problem-solving models, and ways to bring together people from various walks of life.

One important means of disseminating ESD is by pooling the knowledge of the countries and organizations concerned, which can be achieved by listing and categorizing outstanding ESD programmes, compiling a summary of good practices and making this information easily accessible.

In view of the above, and of discussions that have unfolded at UNESCO, the summary of the proceedings of the International Forum on ESD Dialogue, held in Tokyo in 2008, and the Bonn Declaration, adopted at the UNESCO World Conference on ESD held in Bonn, Germany in 2009, included the following three recommendations, agreed by participating countries:

- To develop model projects that can be undertaken jointly by multiple stakeholders
- To establish a framework for cooperation among all stakeholders, including private companies
- To increase the number and quality of UNESCO Associated Schools.

Reaching these goals will require cooperation with UNESCO and efforts by member countries to identify model projects and undertake programmes to disseminate ESD. Japan is about to start a registration scheme of ESD activities, named '+ESD Project', as one method for achieving this.

To produce concrete results, we must set out priority goals and an action plan for achieving them, with periodic reviews to confirm that the measures in the plan are being implemented. It is also necessary to formulate meaningful indicators for measuring progress.

Japan will be hosting the End-of-Decade Conference of the DESD in 2014. In the second half of the Decade, individual countries must step up their efforts to incorporate the principles, values and practices of sustainable development into all facets of schooling and learning. Japan will continue to collaborate and cooperate with UNESCO and member countries to contribute to the global promotion of ESD.

ASEAN higher education and sustainable development

Prof. Dr. Supachai Yavaprabhas, Director, Southeast Asian Ministers of Education Organization: Regional Center for Higher Education and Development

The human rights community believes that sustainability is attainable through and supported by peace, justice and democracy. Economic educators define sustainability as 'living on the interest rather than the principal'. For the education community, education is an important tool linking knowledge to environmentally, socially and economically sustainable development.

The idea of education for sustainable development (ESD) has been explored since the concept of sustainable development (SD) was first endorsed at the UN General Assembly in 1987. However, ESD was initiated and driven from outside of the education community, especially by international political and economic forums. To respond to this challenge, it is necessary to raise awareness of education as the key to sustainability within the education community. The role of higher education (HE) in particular has long been considered fundamental to reducing the threat to sustainability.

What kind of sustainable development are we talking about?

According to UNESCO, the highest per-capita rates of consumption take place in the most educated nations. Clearly, more education is not sufficient to lead societies to sustainability. We need to clarify what dimensions and goals of sustainable development we specifically seek to achieve for the future direction of HE.

Before 1997, the conceptual framework of HE in Southeast Asia (SEA) was predominantly drawn up and implemented for the sake of economic growth. As a result of quantitative expansion, HE curricula in the last two decades have generated 'growth with inequity'. Therefore, HE *about* sustainable development and HE *for* sustainable development need to be equally integrated and involve the dimensions of ecological and socio-economic sustainability in the coming decade's higher education framework.

In SEA, three pillars of SD – economic development, social development and environmental protection – have been reaffirmed in the agendas of The Association of Southeast Asian Nations (ASEAN) in promoting the ASEAN Community 2015, which comprises ASEAN Political Security Community, ASEAN Economic Community and ASEAN Socio-Cultural Community. In line with this, the region needs to define SD in more specific dimensions. One of the questions to start with is: "What is to be sustained and what is to be developed?". Scholars and practitioners have sought to sustain nature, economy and community.[1] To achieve these targets, a parallel demand to be developed is HE. In the roadmap to the ASEAN Community 2015, however, the issue of HE and sustainability has not been emphasized. The Southeast Asian Ministers of Education Organization: Regional Center for Higher Education and Development (SEAMEO RIHED) roadmap for the harmonization process in higher education in SEA is designed to redress the balance.

Empowering sustainable development with higher education

An important element in the achievement of sustainability is human capital. The level of expansion of HE influences the expansion of human capability, which is the essential basis for serving SD goals. How HE contributes to sustainable development can be seen as a tool for the creation of social opportunities which enhance human capability in its ecological, economic and socio-cultural aspects.[2] However, the question has long been asked whether raised living standards and egocentricity as a result of education lead to increased economic exploitation of natural resources. The goal of higher education for sustainable development (HESD), therefore, needs to involve not only knowledge and principles of SD, but values of SD as well as learning skills (how to do, to know, to be and to live together). A reoriented curriculum in HE will address and contribute to sustainability, to activate and increase awareness of environmental protection, economic productivity and effective consumption as well as community ties and social well-being.

To drive HE as a tool to promote better long-term values and attitudes toward SD, it is necessary to approach the issue of regional sustainability in terms of process and methods of implementation at both national and regional levels. The following stages are proposed for HESD in Southeast Asia:

Stage 1: Preparing for HESD

The essential first step in implementing and promoting HESD is to build and develop awareness within educational communities and the public at local, national and regional levels. Governments and leaders at all levels of university governance must put efforts into outlining the links between higher education and more sustainable societies. Brainstorming methods and strategies of implementation for HESD can help in structuring and placing HE to achieve SD. It is also necessary to determine what levels and themes and related values and skills for SD will be appropriate and practical to be woven into HE under the different conditions of countries in the region. Links to existing issues in a country such as educational reform or economic viability must be taken into account when implementing HESD. Finally, the concept of SD for the

Image: SEAMEO RIHED

The 2010 ASEAN Quality Assurance Network roundtable meeting, 29-30 July 2010, Jakarta, Indonesia

whole region needs to be defined and clarified so that each nation will head in the same HESD direction.

Stage 2: Cooking HESD

The process of implementing HESD needs involvement both at decision-making and higher education institution (HEI) levels for policy synergies and common practices. Funding sources, independent bodies, professional bodies and communities must participate as stakeholders in the process to ensure the alignment of HESD and local and regional context. Sharing of responsibility among ministries of education, environment, commerce, state, health and culture is crucial to combine expertise and resources to build better quality HESD. Furthermore, sharing good practices of curriculum development and pedagogic methods among regional HEIs is another way to make HESD sustainable. An informed society with various relevant stakeholders could collaboratively assist in developing realistic strategies to build human capacity equipped with knowledgeable and capable leadership. The capacity-building process can occur through academic training as well as teaching and learning. Financial and material resources for higher education must be developed by national and local governments and the development of curricula, materials and human resources, including administration, must be funded at both levels.

Stage 3: Serving HESD

In order to deliver HESD to the public effectively and successfully, the most important factor is popularity. HESD should use 'bottom-up' practices by promoting the concept of sustainability in popular culture and government policies. For instance, His Majesty the King of Thailand's sufficiency economy philosophy,[3] which emphasizes SD, has been shaped and encouraged at both local and national levels. Its practices of moderation, reasonableness and self-immunity are woven into Thai people's daily lives. Moreover, the adoption of the philosophy into the HE curriculum by some Thai HEIs[4] shows remarkable outcomes at government level. In order to bring about major changes in HESD, state and community need to nurture a climate of creativity and safety that allows risk-taking to achieve new educational and sustainability goals.

The role of SEAMEO RIHED in HESD

In an effort to promote HE cooperation in the SEA region, SEAMEO RIHED's activities benefit SD goals in terms of producing qualified human capital and creating a dynamic education climate. The SEAMEO RIHED roadmap for the harmonization process in higher education in Southeast Asia is designed to reinforce the three pillars of the agendas for the ASEAN Community in 2015, which foster SD. Our attempt to create a common space for HE in SEA has been advanced by identifying and implementing the following areas:

- Student and staff mobility
- ASEAN Quality Assurance Framework
- Southeast Asia Credit Transfer System
- Leadership development programme
- E-learning and mobile learning
- ASEAN research clusters.

These are the mechanisms prioritized by SEAMEO RIHED to establish a Southeast Asian Higher Education Area (SEAHEA), which will be the overarching infrastructure to support HESD. They will help create a highly skilled workforce to serve cross-border employability, ongoing productivity and stable economic growth.

Student and staff mobility

In 2009, SEAMEO RIHED developed the M-I-T (Malaysia-Indonesia-Thailand) Student Mobility Pilot Program, which is our attempt to overcome the limitations of previous projects (which were restricted to selected HEIs) by working with governments and HEIs at a regional level. This project has impacted positively on both academic and socio-cultural development in the region, helping to nurture a sound and innovative environment for promoting HESD.

ASEAN Quality Assurance Framework

The ASEAN Quality Assurance Network was initiated in 2008 to share good practices of quality assurance (QA), recognize HE qualifications and facilitate cross-border mobility. This mechanism ensures a standardized HE system and educational quality. The goal of developing the ASEAN QA Framework will help shape and establish HESD in the region.

Image: SEAMEO RIHED

The third meeting of the MIT Student Mobility Programme: International relations officer meeting, 7-9 December 2009, Jakarta, Indonesia

Southeast Asia Credit Transfer System
At the recent Southeast Asia Policy Forum on the Regional Credit Transfer System, held by SEAMEO RIHED in Thailand in June 2010, the necessity to develop the Southeast Asian Credit Transfer System (SEA-CTS) was raised among senior officers responsible for policy-making in the region. The resulting principles of the SEA-CTS structure are to be tabled for discussion at the fifth Meeting of Directors-General/Secretaries-General/ Commissioners responsible for Higher Education in Southeast Asia in 2011.[5] This mechanism is expected to enhance the future comparability of different study programmes and HE systems. The success of the credit conversion system and comparable HE systems will help embed the common direction and shared goals of SD into the Southeast Asian HE system.

Leadership development programme
The Higher Education Leadership Academy of Malaysia (AKEPT) put a leadership development programme into action by launching several pilot executive development courses in 2010. This is a key endeavour to invest in human resources in the HE field, supplementing strategies to build human capacity, the essential element for promoting HESD.

E-learning and mobile learning programme
With the aim of facilitating quality assurance and student mobility, the Indonesian Ministry of National Education and the Southeast Asian Ministers of Education Organization Regional Open Learning Center (SEAMOLEC) have implemented an e-learning and mobile learning programme. The project is designed to focus on collecting digital content in the five study areas that are the focus of the M-I-T Student Mobility Pilot Project: agriculture, language/culture, hospitality and tourism, international business and food science and technology. The aim is to ensure and further promote massive accessibility to HE and lifelong learning.

ASEAN research clusters
The Office of Higher Education Commission of Thailand and SEAMEO RIHED have realized the necessity to set up a three-year roadmap for promoting research clusters in the Southeast Asian region.[6] The roadmap will focus on building up the key platforms for Southeast Asia Research Clusters, including research assessment exercises, research publications and possible establishment of an ASEAN Citation Index, as well as academic research clusters. The clusters are perceived to create long-term regional research development and absolutely sustainable development in the sense that they will engage various stakeholders and researchers in all related fields to identify regional problems. The expected outcomes are innovation and improved knowledge of SD prospects.

Reflection on the past and future of HESD
To rally for the promotion of HESD in SEA, strong awareness must be raised at every level and sector in all regions. Willingness and commitment to develop a regional policy framework of HESD is essential. As there is no established universal definition of SD, nor is there a universal model of ESD,[7] a regional HESD framework should be designed, based upon shared goals and general consensus on the principles of SD and local contexts and priorities. In ASEAN, a special emphasis has been placed on sustainable economic development; however, the economic dimension has to be supported by the ecological and social dimensions. What has happened in practical terms in ASEAN societies is that the paradigm has shifted and focused on two of the three dimensions — the ecological and the economic. Industries, in collaboration with scientists, put particular emphasis on local environmental safeguards. Strengthening the reciprocity of HE and SD will mutually benefit the ultimate shared goals of both entities. The new route that SEAMEO RIHED endeavours to create for the HE system in SEA is based on a holistic and interdisciplinary approach, aiming to develop not only absolute knowledge, but also the proper skills, values and behaviours needed for sustainable regions.

ESD in a developing nation

Kartikeya V. Sarabhai, The Centre for Environment Education, India

The United Nations Environment Programme campaign slogan for World Environment Day 2008 was 'CO_2: Kick the Habit!' The Centre for Environment Education (CEE) was asked by the Ministry of Environment and Forests, Government of India to publicize the campaign in India. At CEE, we asked ourselves the question: "What would such a slogan mean to a person in a village in India who perhaps has never had an electricity connection, and has no running water and no toilet?" Which CO_2-intensive activity was a poor rural Indian family meant to 'kick'? Or take those who live in a city in India. 40 per cent of urban dwellers in India live in slums with no real access to energy-intensive amenities. How are they going to kick a habit that they could never afford to have in the first place? It was obvious that a new slogan was required in India. We then decided to replace the word 'kick' with 'pick' and transformed the campaign slogan into 'CO_2: Pick Right', which urges people to consider the need to make developmental choices that are sustainable.

Earlier in 1992, CEE was asked to prepare India's report to the UN Conference on Environment and Development in Rio, Brazil. In that report we emphasized the fact that the real challenge for a country like India was not 'how to get there' but 'how not to'. By this we meant that while the dominant development paradigm was pulling all developing nations towards achieving living standards that emulated the largely unsustainable lifestyles of the Western developed nations, the challenge for these nations really was to break away from a development approach that was merely imitative of the West and to embark on an alternative development pathway by making choices that were indeed different, appropriate and sustainable — to 'pick right'.

Thus while education for sustainable development (ESD) in developed nations may indeed be designed to retool society and lifestyles by kicking several bad habits, in a developing country, ESD needs to focus more on empowering people by making them aware and giving them the ability, knowledge and self confidence to make sustainable choices. Indeed, empowerment through education and awareness has been at the core of CEE's strategy for ESD in India.

CEE's efforts towards education for sustainable development

CEE was set up as a centre of excellence in environment and sustainability education in 1984 as a partnership between the Ministry of Environment and Forests, Government of India and the Nehru Foundation for Development, a non-governmental organization (NGO). Started initially with a focus on the formal educational system, CEE has evolved ESD strategies in several key programme areas, which highlight how ESD in a developing country must encompass a wide variety of educational situations and opportunities, as well as partnerships with a wide variety of groups. The following reports describe the evolution of these programmes, as well as the slow but steady mainstreaming of ESD as a priority in the country.

1. ESD and the school system

The Indian Constitution states that it is the responsibility of every citizen to protect the environment. In response to public interest litigation, the Supreme Court of India has said that if citizens are to fulfil their duty, they must learn about the environment. As a result, in 2003, a Supreme Court judgment made teaching of environmental studies mandatory for all levels of formal education. The school curriculum therefore needed to be reviewed in this context. Between 1999 and 2000, CEE participated in a massive exercise that analysed all school textbooks in over 15 languages in India to identify the topics through which environmental and sustainability concepts could be introduced or strengthened. Over the next five years (2000 to 2005) all textbooks in the country were revised to include environmental education. The next step was to train teachers in environmental education. CEE played a critical role in training master teachers in all states.

Wildlife and eco-clubs have a long history in India and the National Green Corps programme of the Ministry of Environment and Forests supports eco-clubs in schools. Today there are nearly 100,000 schools enrolled in this programme.

CEE and the Ministry of Environment and Forests have launched a nationwide programme called Paryavaran Mitra, or friends of the environment. Through this, we reach out to nearly 200,000 schools with an ESD programme that focuses on energy, waste management, biodiversity and greening, water, culture and heritage. This programme has resulted in an alliance with the state education departments and industry (ArcelorMittal) and connects schools with grassroots level NGOs.

2. ESD in higher education

Colleges and universities can play a very significant part not only in creating a better understanding of sustainability among their students and making their own campuses sustainable, but also in reaching out to those outside college. CEE has involved students in monitoring the environment. This work leads to the ground truthing of environmental data and is a very instructive scientific activity.

Image: CEE

Young graduates act as 'community entrepreneurs'

Image: CEE

CEE launched a major programme to introduce the concepts of waste segregation and recycling

The concept of the Regional Centres of Expertise (RCEs) was launched by the United Nations University, Institute of Advanced Studies as part of the UN Decade of Education for Sustainable Development (DESD). The objective of the RCEs is to mobilize a network of existing formal, non-formal and informal education organizations to engage with the local/regional community on sustainable development issues. CEE facilitates five RCEs in India.

CEE leveraged existing networks to create the RCEs in partnership with universities and other institutions of higher education, and also invited other partners, some old and some new. In Pune, a large city in western India, for example, the RCE that is focused on urban issues has Pune University as a partner, along with institutions involved in this area. The relationship has been mutually beneficial, as the RCE gains from the expertise of the university faculty and provides it with the opportunity to get students engaged in projects that are meaningful and provide hands-on learning. The students have conducted various surveys and focus groups, which have helped them understand issues of urban sustainability. They have also been involved in activities such as helping citizens to conduct participatory budgeting exercises, as well as audits of municipal budgets.

3. ESD and rural development

Traditionally, rural lifestyles in most of Asia were sustainable. But as these rural societies have transformed and developed, the new practices are very often not sustainable. Excessive extraction of underground water resources, unwise use of chemical fertilizers and pesticides and unsustainable animal husbandry practices are just a few of the problems. CEE worked closely with rural higher education institutions and trained young graduates to go out into the villages and act as 'community entrepreneurs'. CEE currently has a handbook on livelihoods for sustainable development. For instance, producing bio-compost and vermicompost can provide sustainable livelihoods to a few families in each village. Through this programme, CEE promotes agro-forestry, production of cattle feed, roof rainwater harvesting structure, green manuring and mulching, bio-fuel, joint forest management, solar drying and micro enterprises like handicrafts and beekeeping.

Today this work is carried out in several Indian villages and is an important tool of ESD at the grassroots level.

4. ESD and disaster management

In 2001, the state of Gujarat in western India where CEE is headquartered suffered a major earthquake. Several hundred villages were destroyed and thousands lost their lives. CEE embarked on a major rehabilitation programme, through which more than 1,500 houses were built, along with new schools and village level infrastructure.

But the most significant part of the programme was not so much the creation of physical infrastructure, as the change in the way the people in these villages started to view development. They began to ask fundamental questions related to development. Having seen a crisis, they could better understand the slower but more significant crises of unsustainable behaviour. CEE has since worked in areas affected by the tsunami and earthquakes in Kashmir and launched rehabilitation programmes that include ESD as a major component.

5. Waste management

One of the first things that might strike a foreign visitor to an Indian city is the problem of waste. While most products in traditional society were biodegradable, this

Image: CEE

A major tool for ESD that has emerged in India in recent years is the process of public consultations

Image: CEE

Participation of decision makers in public consultations

is not the case in a modern society. In addition, in most developing countries, the use of new substances is not accompanied by any knowledge of how to dispose of the resulting waste, or any awareness of the impact of improper waste disposal on the environment.

CEE launched a major programme to introduce the concepts of waste segregation and recycling. As a result of these efforts, several housing societies now segregate waste and some compost it. Plastic carry bags are shredded and woven into new products. Office waste paper is collected and used to make handmade paper. CEE runs a major bio-medical waste programme and runs a facility to demonstrate how this can be sustainably and commercially managed.

6. ESD and industries

Historically the word 'environment' is a term that has been viewed with suspicion by industry. Many from this sector felt that protecting the environment could only mean the curtailing of industrial growth. CEE's campaign started with the intention of changing this attitude. The campaign did not use the word 'pollution', but spoke of 'waste recovery'. It emphasized the efficiencies created by saving electricity and other resources through better housekeeping and resource management, as well as the long-term benefits of sustainable practices for industry. CEE's programmes in this area not only involve training industry personnel but also include direct intervention in instituting sustainable practices at the project level.

Training of professionals who can initiate and manage ESD programmes also needs to be a critical component of ESD efforts in a developing country. CEE has partnered with the Gujarat University to establish a Masters programme in climate change. Several projects today also advise industry on their corporate social responsibility activities.

7. ESD and public policy

ESD needs to play a very significant role in policy making. While school and college education will establish the foundation for the future, daily resource-use decisions need to be made with sustainability in mind. Through a number of initiatives, CEE reaches out to key decision makers in the government at the local, regional and national levels.

A major tool for ESD that has emerged in India in recent years is the process of public consultations. Over the last two years CEE has, on behalf of the Ministry of Environment and Forests, Government of India, conducted major public consultations across India on policy issues relating to coastal zone management, the introduction of the genetically modified eggplant, as well as on a new Green India Mission. Each of these consultations has attracted tremendous public participation and feedback, which has resulted in major modifications in public policy. The success of these consultations is in no small measure due to the importance given to these consultations by the government and the personal involvement of the Minister for Environment and Forests, Shri Jairam Ramesh.

Meeting the challenge

ESD encompasses a wide variety of initiatives that together constitute the overall strategy for sustainability at the local, national and global levels. There are numerous innovative field level approaches, pioneering programmes in the formal and non-formal sectors, and policy initiatives to meet the challenge of sustainability. The initial years of the DESD have catalysed numerous programmes with very significant findings. It is now time to put these together to improve networking and learn from the experience of others. It is time to plan the last few years of the DESD and to create institutional mechanisms that propel this activity beyond the Decade.

Developing informed fishing communities in South Asia

Yugraj Singh Yadava, Director, Bay of Bengal Programme Inter-Governmental Organisation

The four south Asian nations of Bangladesh, India, Maldives and Sri Lanka are important players in the global fisheries arena. The contribution of the fisheries sector to their national economies is more than one per cent of their national GDPs. Fish and fish products are among the most heavily traded food commodities in the region. These nations are also members of a regional fisheries body, the Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO), previously known as the Bay of Bengal Programme (BOBP).

Located on the western and northern boundaries of the Bay of Bengal, these countries exploit the rich and diverse fisheries resources of the Bay. However, increasing human population, especially in India and Bangladesh, and reduced productivity of coastal fisheries through unsustainable fishing practices, habitat degradation, post-harvest losses, etc. threaten the livelihoods of millions of small-scale fishers in the region. In recent years, capture fisheries have either stagnated or seen only a small increase in terms of production, while aquaculture has continued to grow at a rapid rate. Further decline of fisheries would severely impact the livelihood security, food availability and national economies of these countries.

The total fisher population in these four countries is estimated at about 5.2 million, with about 69 per cent (3,574,704) in India alone. The fisher community in this region is typical of many other parts of the developing world. They are mostly the poorest sections of society, residing in remote, inaccessible areas, mostly out of the reach of community development programmes such as education, health and sanitation, water supply, electricity, housing, etc. This exclusion from mainstream development considerably lowers their quality of life. The table below provides a comparative picture of the total fisher population and selected parameters on their education level in these four countries.

Activities aimed at educating fishing communities

The BOBP-IGO and its forerunner, the BOBP, have been working in these countries for more than three decades. In the initial years, the BOBP focused on increasing fish production through technology inputs. It also became clear during the earlier period of the BOBP in the region that there was a need for knowledge at all levels of the community. Thus, the programme also focused on education, training and awareness creation and implemented a variety of activities, which kept evolving with the changing times and needs of the community. Various education and awareness programmes of the

Fisher population, Human Development Index and Education Index in four south Asian countries

Countries	Bangladesh	India	Maldives	Sri Lanka
Fisher population	902,961[1]	3,574,704[2]	13,980[3]	664,820[4]
Education level	About 9 per cent of fishers have basic education[5]	57 per cent of the population is educated. However, only 51 per cent of educated fishers have primary level education[6]	About 98 per cent of fishers have basic education[7]	About 40 per cent of fishers have completed primary school education[8]
Human Development Index in Education (2007)[9]	0.543	0.612	0.771	0.759
Education Index (2007)[9]	0.530	0.643	0.885	0.834
Public expenditure on education as percentage of total government expenditure (2000-2007)[9]	14.2	10.7	15.0	NA

Image: E Amalore, BOBP

A link worker discusses health issues with fisherwomen in Bangladesh

Image: S Jayaraj, BOBP-IGO

Sri Lankan school children participate in the BOBP-IGO painting competition on 'Life after Tsunami'

BOBP and the BOBP-IGO contributed to the development of fisher communities in the region.

Non-formal education programme for children and adults

A non-formal education project (NFEP) for children of marine fishers was launched in 1983 in Orissa, India. The BOBP prepared a curriculum and some 120 booklets for children in these communities aged between six and 14. Around 20 non-formal centres were set up in four coastal districts of Orissa. The booklets were printed with funds provided by UNICEF. An important concept underlying their development was that they should integrate learning with life. The first pack of 36 booklets was designed to teach basic letters, words and numbers. The State Council of Education, Research and Training and the National Council of Education, Research and Training participated in the programme. The curriculum's main features were flexibility and adaptability to the learning needs of the community and it was designed to be closely related to local resources and opportunities. The BOBP's NFEP for children in fishing communities furthered the Government of India's nationwide scheme, Comprehensive Access to Primary Education, popularly known as CAPE.

From 1982 to 1985, the BOBP organized a first-of-its-kind NFEP for adult fishers in the state of Tamil Nadu, India. A package of learning materials, to be used in non-formal adult education (NFAE), was prepared for this community. The NFAE package included an animators' guide, a numeracy primer, a trainers' manual and supplementary readers. The trainers' manual and animators' guide sparked astonishing demand, not just from all parts of India, but worldwide – demonstrating the need for these publications. The most heartening index of the project's success is that it inspired an almost identical NFAE package for the rural population in general by the Government of India.

Using the airwaves to reach fishing communities

In poor, isolated communities, radio is often the only link to the outside world. The BOBP's work in promoting the use of radio for fishing communities has proved to be an effective way of reaching large audiences.[10] Launched in 1978, the fisherfolk radio programme in the Maldives is one of the oldest in the region. In the early nineties, the BOBP, in association with World Radio for Environment and Natural Resources (WREN) UK, trained the staff of the Voice of Maldives (VOM) and the Ministry of Fisheries and Agriculture, Government of Maldives and fine-tuned the programmes. In scattered island communities, radio programmes are immensely useful and also serve as a binding force. The VOM now produces a variety of radio programmes for the fisher community, including weather bulletins, technology updates, market and tuna fish price reports, music and religious discourses. The Maldivian experience is an excellent example of the use of radio in the fisheries sector.

Small-scale Sri Lankan fishers are neither avid readers nor fans of television. But they listen to the radio, whether out on the seas, repairing nets on the shore or relaxing with family at home. In January 1989, the Sri Lanka Broadcasting Corporation (SLBC) started a radio programme for fishers — a five-minute programme every week day (news and features, fish prices, music) and a 15-minute programme every Sunday (news and views, discussion, entertainment) in Sinhalese. The programme was prepared by a Fisherfolk Radio Unit set up by the Ministry of Fisheries and Aquatic Resources, with technical and material assistance from the BOBP and some funding assistance from the Norwegian Agency for Development Cooperation (NORAD). The programme has grown over the years and is a valuable source of information for fishers out at sea.

Similarly, radio is a useful medium of information for fishers in Bangladesh, where Bangladesh Betar, the national radio service provider, produces a variety of programmes for fishers and fish farmers. The Bangladeshi fishers out at sea stay tuned to their radio sets for weather bulletins, especially for information on

Image: S Jayaraj, BOBP-IGO

Colouring books help schoolchildren to critically examine their natural environments

Image: S Jayaraj, BOBP-IGO

Disseminating knowledge – a sample of the publications of the Bay of Bengal Programme

cyclones, which often come without sufficient warning and are the cause of thousands of fatalities at sea every year. The BOBP-IGO has prepared jingles and snippets in the Bangla language on safety at sea to be broadcast through Bangladesh Betar.

Comic books as a medium of education

Of the several communication tools that the BOBP tried, the comic book format was one of the most successful. Its first comic book, *Our fish, our wealth*, cut across the barriers of sex and age and became highly popular. Published in 1992, the comic book promoted awareness of the mechanisms of fisheries management among small-scale fishers. Subsequently, comic books were also produced on the subjects of cleaner fishing harbours and good practices in shrimp farming, becoming instant hits.

Other communications tools, such as puppetry, folk theatre, street plays and video films, have been successfully used by the BOBP and the BOBP-IGO. The BOBP used video technology for training and information dissemination as early as 1985. Several video films prepared by the Programme are popular within and outside the region.

Catch 'em young

As sustainability implies that future resource users must be trained to take responsibility, the BOBP and later the BOBP-IGO undertook many programmes and activities aimed at fisher children. It was also considered important to make children aware, as early as possible, of the value of protecting the natural environment. In Maldives, a colouring/work book titled *Life on our reefs* was published for primary schoolchildren on the islands. The main purpose of this book was to encourage the children to:

- Critically examine their natural environment
- Learn about the impact of humans on the coral reefs
- Consider what could be done to help safeguard the future of coral reefs.

After the December 2004 Asian tsunami, which devastated the fisheries sector in India, Maldives and Sri Lanka, the BOBP-IGO in December 2005 organized a painting competition for school children in the affected countries, with the objective of sensitizing the children to such natural calamities. The 2006 annual calendar of the BOBP-IGO featured some of the best paintings from the three countries. Several organizations partnered with the BOBP-IGO in this initiative. In 2009, a poster on cetaceans of the tropical Indian Ocean, printed by the BOBP-IGO, was distributed to all the schools in Maldives to create awareness among school children of the importance of cetaceans in ocean life. The poster was prepared in response to a request made by the Vice-President of Maldives.

Training women as link workers

Fisherwomen play a pivotal role in sustaining and developing the family. It has been observed that income earned by women is more likely to be spent on food and other basic needs than income earned by men. Consequently, it is recognized that an increase in women's income is more likely to improve family status than increased household income per se.

The BOBP implemented a project on activating fisherwomen for development through trained link workers in Tamil Nadu, India. The project aimed at providing fisherwomen with the required basic education and training to enable them to serve as links between village women and government officers. Several link workers were trained and worked for many years in their villages and surrounding areas. Women's self-help groups have been established in many fisher villages in Tamil Nadu thanks to these link workers.

Taking the Code to the grassroots

The Code of Conduct for Responsible Fisheries, or simply the Code,[11] is one of the best examples of collective effort in global fisheries. Signed by the members of

Images: S Jayaraj, BOBP-IGO

The Code of Conduct for Responsible Fisheries has gained wide acceptance and Indian fishers can read the Code in their own languages

the Food and Agriculture Organization (FAO) of the United Nations in October 1995, the Code took many years, marathon effort, formidable expertise and substantial resources to develop. The Code is also an outcome of several contemporary global initiatives. It is elaborate and is directed at everyone concerned with conservation of fishery resources and management and development of fisheries. However, the main weakness of the Code springs partly from its strength. Its language is dry and legal and does not make for easy reading or comprehension.

To allow the Code to reach a critical mass of fisheries practitioners in its member countries, the BOBP and later the BOBP-IGO have undertaken several activities to popularize it and improve its dissemination. The most significant among these activities is the translation of the Code, its concise version and the technical guidelines into several Indian languages spoken in the coastal states of the country and also into the national languages of Bangladesh (Bangla), Maldives (Dhivehi) and Sri Lanka (Sinhala). Each vernacular version is printed in large numbers to allow for distribution to the stakeholders.

In addition, several workshops, seminars and interactive meetings with stakeholders have helped to communicate with fisher communities and stimulate debate and discussion about the meaning of the Code and the implementation of its technical guidelines. These interactions have thrown up innovative ideas on adaptation of the Code to meet the local needs of communities. It has also been suggested that the Code should be made a part of the school curriculum. A special syllabus or a supplementary school programme could be considered for coastal areas, with a focus on fisheries. The fundamentals of conservation, management and responsible fisheries could be taught in an interesting way. Since this is already being done in Maldives, that country's experience could be of interest to other countries in the region.

Communication the key to successful education

The BOBP and the BOBP-IGO have, over the years, found that communication can help improve the understanding of perceptions, world views and frameworks of logic. Appropriate awareness-building can bridge differences by building new structures of learning on traditional foundations of knowledge.[12] In the course of developing communication tools for small-scale fishers, several lessons have emerged:

- The success of any programme for development of small-scale fisheries largely depends on the ability of fisheries agencies to inform, communicate with, motivate and mobilize fisher communities
- Fishers are aware of the dangers of overfishing, but they need education and orientation on resource depletion trends and patterns, fish behaviour, management methods and tools
- The connection between development and data/information is obvious, but a strong disconnect between the two characterizes fisheries in most developing countries
- Gaps in fisheries information should be plugged, to enable better analysis and decision-making
- Involving fishers in information gathering may lead to more reliable data
- Messages blended with popular forms of entertainment in vernacular languages reach audiences more rapidly than meetings and workshops.

The diverse initiatives undertaken by the BOBP and the BOBP-IGO show that education and awareness are fundamental tools for enterprise building among poor communities. Enterprise development requires education to instil knowledge, which does not necessarily lead to resolution of problems, but helps in promoting better understanding of the issues and also in finding solutions. Raised awareness leads to active local participation in the resource management process, which is a precursor to a participatory approach to fisheries management.

Let's take care of the planet: education for sustainable societies

Rachel Trajber, Ministry of Education, Brazil

Paulo Freire, one of the most famous Brazilian educators, pointed out that "the possible dream has to do exactly with a liberation education, not with a domesticating education, while at the same time practicing utopia... Utopia in the sense of the practice that leads to a dialectical dynamic and entails the denunciation of an unjust society with exploitation, and pointing toward a possible dream for society." This is a dream that we now call sustainable development or sustainable societies.

In Brazil, the past seven years (starting on World Environment Day, 5 June, 2003 and culminating on 5-10 June, 2010) have witnessed an astounding force of mobilization and passion permeating environmental education for sustainable societies in schools. Over this period, the National and International Children and Youth Conferences for the Environment were implemented in secondary schools all over Brazil and, later on, throughout the world, ultimately becoming reference points for public environmental education policy management.

In 2010, a cycle of three National Children and Youth Conferences, Let's Take Care of Brazil, which culminated in a successful international conference, Let's Take Care of the Planet, came to a close. Each one pioneered innovative topics and actions shaped by creativity, cumulative learning, complex concepts and methods that were expanded over time. Local, regional, national and international conference processes have contributed to amplify the voices of children and of their schools and communities, and to effectively empower and include adolescents in the international dialogue.

The Children and Youth International Conference for the Environment is included in the framework, mission and goals of the UN Decade of Education for Sustainable Development (DESD), 2005–2014. The main themes of the Decade are citizenship, community values, diversity, interdependence, sustainability, quality of life and social justice, all of which correspond to the goals of the conference. However, above all, the conference seeks to contribute to the incorporation of a new generation that constitutes a large portion of humanity and that is traditionally thought of as the future but that nevertheless lives, thinks and acts in the present.

Images: Ministry of Education, Brazil

World Environmental Day — many nations attended the Conference, which has become a reference point for environmental education policy management

The Government of Brazil organized and hosted these events with an international focus, and received institutional support from agencies for development and cooperation such as UNESCO, UNICEF and UNEP, and from civil society bodies such as the Fondation Charles Léopold Meyer pour le Progrès Humain (FPH). Each conference, as well as the resolutions arising from it, is the expression of a collective action between international organizations and institutions, national governments, civil society and schools.

The youth conferences satisfy elements of the Brazilian National Constitution of 1988, which asserts the rights of present and future generations to quality education and to a healthy and ecologically balanced environment. They also reaffirm values and actions proposed by international civil society, such as the Treaty on Environmental Education for Sustainable Societies and Global Responsibility, the Earth Charter, Agenda 21 and the Charter of Human Responsibilities, and help to further the debate on the United Nations Development Programme's eight Millennium Development Goals.

A great pedagogical opportunity for intercultural dialogue

When thinking about sustainable development, it is important to be aware that the environment cannot be reduced to worries about ecology or an area of biological science or nature that constitutes the basis for sustaining life in the biosphere. In modern society, nature has been transformed into areas of action in which we need to take political, practical and ethical decisions. The conference process is one of these areas of action, aimed at contemporary education where all of us are learning about sustainability. In environmental education, each school has an opportunity to be a space for permanent learning, based on dialogue and respect for all life forms.

The Children and Youth Conference could be seen almost as a pedagogical pretext to promote and update the debate so urgently needed in society, from a critical and participative environmental education perspective. From the first, essentially Brazilian cycle, new possibilities arise, involving other countries on all continents that have already begun their own processes of school, regional and national conferences and supported us in the construction of the International Conference. In the countries represented in Brasilia, various cycles are being produced in many places with other people and cultures, shared and transformed according to their own realities.

The success of the Brazilian National Conference is reflected in the figures: the first, in 2003, involved 15,452 schools and mobilized 5,658,877 people throughout the country. The second, in 2005-2006, reached 11,475 schools and communities and 3,801,055 individuals, and witnessed our youth delivering a Charter of Responsibilities to President Lula. This charter, Let's Take Care of Brazil, is committed to constructing "fair, happy and sustainable societies with responsibilities and actions that fulfil dreams and needs".

The Third National Conference process was held during 2008 and 2009 in 11,670 schools, involving over four million people in the school- and state-level debates, culminating in a national event in April 2009. As this conference occurred in the midst of a global environmental/economic crisis, the environmental education system has been confronted by a triple challenge:

- *The psychological*: building significant knowledge without creating fear of the catastrophe studied or paralysis in addressing potential destruction
- *The educational*: proposing a contemporary education solution, which may rescue the social function of the school as a creative and transformative learning environment. The ministry's Education Development Plan promotes integrated

Image: Ministry of Education, Brazil

Linguistic groups: defining actions for the Charter of Responsibilities initiative, Let's Take Care of the Planet

Image: Ministry of Education, Brazil

Workshops for sustainability — garbage policies

Image: Ministry of Education, Brazil

Hands on in agroecology, planting with nature

Image: Ministry of Education, Brazil

Continental groups: discuss responsibilities at the 'Let's Take Care of the Planet conference'

full-time education in an initiative that seeks quality in the teaching-learning process and student retention

- *The planetary*: engaging in a high-level debate, so as to be able to address global environmental change through sustainable societies. Thus, the Third National Conference received 70 international observers from 43 countries, in preparation for the International Children and Youth Conference, 'Let's Take Care of the Planet'.

The Third National Conference involved the topic 'Global environmental changes: think and act in the school and in the community'. Quality didactic materials were distributed to all secondary teaching networks in the country (58,000 schools) with the objective of contributing to improving school performance based on the results of the Basic Education Development Index, encouraging the inclusion of sustainability and the socio-environmental challenge in the school Political-Pedagogical Plan, and strengthening the role of the school in constructing public education and environmental policies. The material provided tools for navigating environmental issues and inter-disciplinarity in the classroom, while respecting the complexity of the subject by not over-simplifying. Socio-environmental changes beyond climate change are treated systematically and integrated into the sciences, history, geography and languages.

The topics involved the four elements — earth, water, fire and air — in discussion of contemporary problems affecting people and natural systems throughout the planet. Each topic included debate on sustainable actions for mitigative, adaptive, preventive and transformative measures. The material proposed changes to the world-view to protect values that improve quality of life and rethink human responsibilities for the present and future of life on earth. Although the material relates to the Brazilian environmental contexts and policies, several countries asked for English and Spanish translations.[1]

Following the Education and the Environment Ministers' formal invitation to all countries, the preparatory year began with each country defining, adapting and adjusting the process to its own contexts. 62 countries from all continents responded positively to the Brazilian invitation, 52 of which constituted a National Organizational Committee to coordinate school processes and a National Conference, and delegations from 47 countries participated at the international event in June 2010. The mobilization of the Brazilian initiative in this preparatory phase can be illustrated by some data provided by 40 of the participating countries, which directly involved 87,258 schools and 13,153,229 children. In India alone, 80,000 schools and nine million children participated!

The International Conference, a five-day intensive event, involved 600 young students aged 12 to 15 years from 47 countries (38 per cent from the Americas, 24 per cent from Asia/Pacific, 21 per cent from Africa and 17 per cent from Europe), who were elected by other youth in their countries, maintaining a relatively equal representation between gender, delegates from rural and urban areas, capital regions and other cities, public and private schools, and delegates from ethnically diverse and varied cultural backgrounds. The youth gathered to debate a subject that affects all humanity: global socio-environmental changes with a focus on climate change. Together they constructed the Charter of Responsibilities, 'Let's Take Care of the Planet', with actions aimed at sustainability.

The event was organized as a community where everyone is a learner, realizing the role of youth as social actors capable of intervening now. The International Conference had three dimensions: 'youth

selects youth', meaning that the delegates formed the centre of decision-making; 'youth educates youth', where the 69 facilitators aged 19 to 27 years old encouraged participation, facilitated contents and workshops and constructed the entire event together with the coordinating team, through trust in their capacity to assume transformative actions; and, 'one generation learns with another', whereby the 110 adult chaperons participated intensely, both in caring for their delegations and in debating educational policies amongst themselves, resulting in a solid partnership between several generations. This characteristic becomes especially important since it allows innovative ideas to circulate — while children and youth easily absorb new tendencies, they depend on adults to provide the conditions for changes to happen, based on deeper knowledge and effective dialogue.

In other words, by assuming a dialogical, co-educational and intergenerational approach that encompasses the diversity of natural life, culture, ethnicity and plurality of knowledge and understanding, the conference setting amplified the dimensions of learning and policies of education for sustainability. This initiative can be considered an environmental education open to the 'pluriverse', a term coined by Indian philosopher Raimon Panikkar.

The final event as a whole could be considered a harmonious and stimulating environment. Each participating adult, youth and child provided positive evaluations, with an average of 90 per cent of the responses to all questions (methodology, culture, well-being and organization) being 'excellent' or 'good'. Qualitative terms such as 'marvellous', 'great' and 'incredible' appeared many times on the written forms. One adult made a generalization and nicknamed Brazilian education a 'pedagogy of happiness'!

Where to from here?

The question remains: how can all of this be incorporated in formal education inside the classroom? How can we create a school community with a responsible and committed attitude towards local and global socio-environmental issues?

The debate began with the Brazilian Ministries of Education and the Environment inviting national governments to transform their schools and local communities into public spaces of education for all, throughout life, in the search for healthier societies. Now that the event is over, the debate returns to the school communities, which are not limited to reproducing knowledge, principles and responsibilities, but above all can become producers of new knowledge and further actions.

This first Children and Youth International Conference, 'Let's Take Care of the Planet', needs to be a lot more than a beautiful memory of an event. It should become a reference for educators in different countries and regions of the world in unveiling methods and concepts to be studied, adapted and replicated, and especially for contributing to the diffusion and advance of fundamental learning practices for addressing global socio-environmental changes.

Through the activities and the inter-generational dialogues, big steps were taken in the direction of great objectives: empowering delegates to assume global responsibilities and local actions, strengthening youth networks and movements, and advancing the implementation of integrated and sustainable educational policies with educators from the participating countries. This commitment is expressed in the Musical Charter: 'Let's Take Care of the Planet',[2] composed by the children during the conference.

Such a successful educational process, which reached so many countries and involved extensive cooperation, continues at a distance through a Virtual Learning Community (VLC),[3] which encourages more school communities to think globally and act locally for sustainability. The delegates mobilize their schools as well as other individuals who participated in the preparatory stages and International Conference activities. In the VLC, everyone can reaffirm and spread the knowledge of sustainability from their local cultures, while at the same time expressing their dreams and enjoying a rich sharing of information. In this way, the network of care for the planetary biosphere expands.

In future, Brazil will promote continuity by orienting a new international cycle, namely the Second Children and Youth International Conference, 'Let's Take Care of the Planet', beginning in 2011 and ending in 2014. The new cycle requires articulation at least in three areas:

- A national government that, through its education ministry, invites countries and hosts the event
- International organizations of multilateral cooperation that support the host country in mobilization and organization activities
- Civil society organizations, which may anchor the conceptual and methodological principles of care, participation and democracy in the process and the event, and maintain the concepts of responsibilities and actions.

Further articulation includes involving students, teachers, youth and school communities in building sustainable societies, founded in equality, diversity and justice.

The conference's main theme, climate change, still brings further needs and deeper educational challenges, as highlighted by the latest Intergovernmental Panel on Climate Change publications. In Brazil, besides the conference cycles, this issue was also included in the 2008 National Plan on Climate Change, making the Ministry responsible for "implementing sustainable educational spaces through adapting buildings (school and university) and management, and through teacher education and including the subject of climate change into the curricula and teaching material."

The Ministry now seeks to achieve new goals for addressing global social and environmental changes through launching even bolder and more progressive policies that integrate school disciplines with traditional knowledge, and constructing school communities that consider all aspects of quality of life – environmental, economic, political, social, cultural and ethical. In the name of concrete action, and inspired by the British experience, this new programme, Sustainable Schools, trains teachers, students and communities to build, manage and study sustainability.

To consider schools as a reference for sustainable spaces that have the intentionality to educate local communities may be another possible dream to be pursued by the global networks fostered by the DESD.

A pan-Canadian approach to implementing ESD

Carolee Bucker, Lead, Working Group for Education for Sustainable Development, Council of Ministers of Education, Canada

It is imperative that we prepare our youth to deal with the environmental, social and ecological challenges the world is facing. To address these challenges, we need to talk with and teach our students about what it means to live in a more sustainable way — in a way that helps students to understand that social, economic and environmental challenges are connected and must be thought of in relation to each other. We also need to actively engage our students in the application of ideas and solutions for sustainability and encourage them to be sustainable citizens.

The UN Decade for Education for Sustainable Development (DESD) has provided an important catalyst to increase efforts to implement sustainability. In Canada, there are three primary focal points for education for sustainable development implementation:

- The Council of Ministers of Education, Canada (CMEC), through which ministers consult with each other and act on matters of mutual interest, cooperate with national education organizations and the federal government, and represent the education interests of the provinces and territories internationally
- The Federal Department of Environment (Environment Canada), which aims to reflect the national interest regarding questions of the environment and to share public information and awareness strategies
- The Canadian Commission for UNESCO, which engages and consults with civil society.

In Canada as elsewhere, ESD involves incorporating key themes of sustainable development — such as poverty alleviation, human rights, peace, human security, health, environmental protection and climate change into the education system. ESD is a complex and evolving concept and requires learning about key themes from a social, cultural, environmental and economic perspective and exploring how those factors are inter-related and inter-dependent. It is also about reorienting education systems (teaching and learning, governance, facilities and operations and human resources) towards sustainability.

In Canada, the responsibility for education lies with the provinces and territories. In the 13 jurisdictions —

Image: Growing local productions

Schoolchildren in Wabowdan, Manitoba learn about sustainable food production, healthy eating and food preparation

ten provinces and three territories — departments or ministries of education are responsible for the organization, delivery and assessment of education at the elementary and secondary levels. The institutions in the post-secondary system have varying degrees of autonomy from provincial or territorial government control.

In 2008, the CMEC included ESD as one of the key activity areas in Learn Canada 2020, its framework to enhance Canada's education systems, learning opportunities and overall education outcomes at all levels. The goal for ESD is to raise students' awareness and encourage them to become actively engaged in working for a sustainable society. To achieve this goal, a CMEC ESD working group was created in 2008 to coordinate action to support and strengthen the implementation of ESD in all provinces and territories, and to develop a pan-Canadian ESD framework for collaboration and action that builds on current activities for enhanced collaboration at the jurisdictional level.

The DESD has had a considerable impact on education at all levels in the provinces and territories of Canada, and a large number of partners have joined efforts to make ESD a reality. Since the Earth Summit in 1992, these efforts have built on many initiatives to create a culture of sustainability through education. For example:

- As a community of environmental educators and communicators, the Canadian Network for Environmental Education and Communication has continued to play a fundamental role in building capacity for environmental learning and Learning for a Sustainable Future, and is working with other organizations to lead the Canadian response to the UN DESD through the implementation of a series of initiatives, including coordinating ESD Canada
- The Canadian Commission for UNESCO plays a pivotal role in ESD through extensive collaboration and consultations on the issue with government, non-governmental organizations (NGO's) and civil society
- Regional Centers for Expertise in Canada work towards achieving the UN DESD by translating its global objectives into the context of local or regional communities
- Postsecondary institutions are undertaking research in sustainable development and ESD. York University (Canada) is designated as the UNESCO Chair in Reorienting Teacher Education towards Sustainability. There are two other universities with UNESCO chairs that focus on education sustainability and ESD.

The CMEC pan-Canadian ESD framework for collaboration and action, released in the fall of 2010, seeks to ensure that there is a coordinated approach on education for sustainable development at the K-12 level. The framework sets out the actions the CMEC will take in support of the DESD. It is not a substitute for initiatives already underway within each province and territory, but rather it is intended to build on what jurisdictions are already doing, while enabling further information sharing, collaboration and monitoring of progress. The framework is focused on four priority areas.

Priority 1: infusing ESD competencies into the provincial or territorial curricula

CMEC believes every K-12 student in Canada, regardless of grade level and course selection, should develop and use skills to acquire knowledge, to adapt behaviour and to take action to ensure a sustainable future. ESD competencies (knowledge, skills, attitudes and values) are the means by which students can gain a deeper understanding of their own and others' diverse perspectives on sustainability issues.

Efforts have been made across Canada to integrate ESD into curricula, policies and legislation targeting primary and secondary education. The provinces and territories have introduced the concept of sustainable development in the curriculum as essential elements of core courses, as

Image: Learning for a Sustainable Future's Project FLOW

Grade 10 students from Norwell Secondary School in Ontario undertake peer mentoring with Grade 5 students about water sustainability issues

Image: Learning for a Sustainable Future's EcoLeague

Students at St. Dunstan Catholic School planting vegetables and native species in their school garden

standalone courses, as strategies and content that can be introduced in any subject and at any level, as learning outcomes that are further developed as the students move through the grades, as cross-curricular content, and as both content and pedagogy that are infused throughout the curriculum, teaching and learning. Schools are also engaged in ESD projects and extra-curricular ESD-related activities.

The influence and integration of Aboriginal knowledge into ESD and in particular, into the curriculum, has been an essential quality of ESD across Canada. As part of its curriculum renewal, the Ministry of Education in Saskatchewan articulated its vision for First Nations and Métis education as part of a provincial education system that foundationally places these ways of knowing together with the historical, contemporary and future contributions of these peoples to create a culturally responsive education system that benefits all learners.

Nunavut's Education Act, which received assent on 18 September 2008, specifies that the public education system shall be based on Inuit societal values and on the principles and concepts of Inuit Qaujimajatuqangit (which translates as 'that which is long known by Inuit'). The population of Nunavut is more than 80 per cent Inuit, and the territory's education system reflects their essential beliefs, including those governing their relationships with each other and with the land. Many of these beliefs reflect the issues addressed in ESD.

In First Nations schools in Manitoba, numerous education projects have been established that have targeted all areas of sustainability: environmental, economic and social. Some of these have included land-based initiatives that support a traditional sustenance way of life (for example trapping and fishing); school gardens; cultural and traditional knowledge youth camps; First Nations language immersion; astronomy from an indigenous perspective; community traditional names mapping; and infusion of First Nations knowledge and culture into the curriculum. In essence, the work of Manitoba First Nations Education Resource Centre to provide curriculum and project support for a quality education grounded in the local environment and community is an advancement of ESD in First Nations schools.

An example of an ESD cross-curricular activity that had widespread positive implications for a northern community is the Mel Johnson School gardening project in Wabowdan, Manitoba. This community is literally growing a healthier life through an ever-expanding school gardening project where students are supported in placing gardens at their homes. This project teaches students valuable skills in sustainable food production, healthy eating and food preparation. Further, participation in this project gives the students a sense of pride, resulting from being given responsibility and guidance that lead to the experience of accomplishment and success. Following the example set by their children, many parents in this mainly Aboriginal community have shown interest in edible gardening and incorporation of more varieties of fresh vegetables in their families' diets.

Priority 2: building ESD capacity through professional learning and research

It is imperative that professional learning and research be supported within the K-12 education community (educators, faculties of education, school operations staff, government education officials and other education stakeholders) for effective ESD. While the education community may already be engaged in some aspects of ESD, it is important to further enhance the strengths and networks in place through professional learning.

Training for teachers and other professionals in ESD is delivered by ministries, school boards, teacher associations, universities, not-for-profit organizations and many other groups, using classrooms and active learning and often developing networks of educators as a consequence.

To help bring about system-wide ESD and the systemic change required in school divisions and schools in Canada, the Sustainability and Education Academy (SEdA) was formed. SEdA is a partnership between Learning for a Sustainable Future, the Faculty of Education, and the UNESCO Chair on Reorienting Teacher Education towards Sustainability — all at York University in Toronto. SEdA's Education Leaders' seminar motivates and equips senior education officials to lead the integration of sustainability as a core value in all aspects of formal education, including policy, curriculum teaching, learning, professional development and the sustainable management of human, physical and financial resources. The seminar is designed for senior officials from ministries of education, school boards and faculties of education across Canada. The seminar is also focused on creating networks that can work together in the future.

Priority 3: identifying and promoting learning resources and research to support ESD

The education community in Canada needs ESD learning resources that support curriculum and professional practices, as appropriate. Ministries and departments of education produce, finance, contribute to, assess and make available a vast selection of materials tied to the learning outcomes linked to the issues subsumed in sustainable development. Other government departments and non-governmental organizations (NGOs)

provide tools and materials to support teaching and learning around sustainable development.

One such resource is Resources for Rethinking (R4R), created by the NGO, Learning for a Sustainable Future, which is a free, online database of peer-reviewed, curriculum-matched teaching resources that support active, interdisciplinary learning about key environmental, social and economic issues. R4R features over 660 print, electronic, and audiovisual resources published by not-for-profit, government and educational organizations. Teachers have reviewed the materials before inclusion. The database can be searched by sustainability theme, grade, subject, jurisdiction and language.

Research on issues of sustainable development can be found in post-secondary institutions, NGOs and governments. Research institutes and specializations at colleges and universities address specific aspects of sustainable development and are often involved in teaching and collaborations with public and private partners. The work of the Canadian UNESCO chairs demonstrates an international approach to sustainable development research and dissemination.

In 2009, the Canadian Council on Learning issued the document *Making the Environmental Grade: The Benefits of Going Green in the Classroom,* which assessed the research on how environmental education improves overall learning. The conclusions stressed how the multi-faceted nature of environmental education is a key component of its effectiveness, as it allows for the integration of many techniques connected to good education, such as critical thinking, inquiry, hands-on learning and group work. The need for teacher professional development and support from school and school division administrators was also underlined.

In autumn 2010, CMEC will undertake an in-depth exploration across Canadian faculties of education to assess how the faculties are incorporating ESD into their teacher and administrator training courses and research and to identify what new teachers need (but are not yet receiving) to implement ESD when they enter the school system.

The province of Manitoba is working with one of Canada's leading social indicator experts to assess sustainable development knowledge, attitudes and choices among students, in order to gauge whether investments in ESD are leading to sustainable lifestyles among young people.

Priority 4: support and guide the implementation of ESD system-wide

ESD is reinforced when entire educational jurisdictions are engaged in a systemic, inclusive and participatory approach that reflects ESD principles. The concept of involving whole schools in ESD and sustainability practices is growing across Canada. In some cases, it reflects a government policy adopted by departments or ministries, including education, and then by school boards and individual schools. It may also be a support and recognition programme at the ministerial level, or the initiative may come from the school division or institution.

There are many examples in provinces and territories across Canada of how schools are becoming sustainable and how provincial jurisdictions are supporting the whole-school approach. The government of British Columbia is working to become carbon neutral in 2010, and its Ministry of Education supports this goal in its operations and educational activities across school districts. The Climate Action Charter has been signed by all 60 school districts in the province. In return for committing to actions such as reducing emissions from operations and transportation and offering educational opportunities for students (in partnership with their parents) that promote sustainability and climate action at school and at home, the school districts are reimbursed annually for all the carbon tax they paid in the previous year.

There are now 1,000 Brundtland Green Schools in Quebec, which act locally and think globally to help create a green, peaceful, united and democratic world. The schools carry out projects to reduce, reuse, recover and recycle and link their actions to sharing, cooperation, democracy, fairness, solidarity, peace, human rights and respect.

Manitoba is an area which has benefited from a sustainability policy introduced in April 2007. Manitoba's Green Building Policy requires all new provincially funded buildings, including schools with an area greater than 600 sq. m. (6,458 sq. ft.), to meet a minimum Leadership in Energy and Environmental Design (LEED) silver certification.

Ontario has almost 1,000 schools that are part of EcoSchools, a five-step programme to help schools play a part in keeping the natural environment healthy for future generations. The steps include establishing an eco team; assessing the needs of the school through a review that determines where energy can be conserved; identifying priorities and developing an action plan for the conservation of energy; implementing the action plan with the involvement of the entire school community; and monitoring and evaluating progress. Programme guides have also been developed to reduce energy use, minimize waste and redesign school grounds.

Celebrating progress

The material presented above is just a few of the ESD initiatives taking place in Canada, many of which are happening at the individual, provincial and territorial level. There are clear signs of progress towards ESD integration in Canada — illustrated by the increase in provincial and territorial policies, curriculum frameworks and other documents that have addressed the concepts of sustainable development and made them central to education. NGOs are increasingly involved in programme delivery, teacher training, resource development and research. Post-secondary institutions have more programmes and research that address ESD. Indigenous ways of knowing are more fully integrated into many curricula, especially regarding environmental sustainability and relations to the land.

CMEC has shown strong leadership in supporting, advancing and strengthening a pan-Canadian approach to the implementation of ESD. By introducing a pan-Canadian ESD Framework, CMEC sets forth a number of strategies for collaboration and action, which will catalyse achievement of the shared goal of ESD in all provinces and territories.

Despite the progress in ESD, challenges and obstacles remain — especially in relation to the task of truly integrating ESD into education at all levels. Change in education is a slow and deliberate process, and the progress made needs to be celebrated at the same time as the obstacles and challenges are acknowledged.

Promoting good practice in education for sustainable development: the recognition of Official Decade Projects in Germany

Gerhard de Haan, Professor for Educational Future Studies at the Freie Universität Berlin and Chair of the German National Committee for the UN Decade of Education for Sustainable Development

Increasing the visibility of good practice in education for sustainable development (ESD), promoting innovative approaches to ESD, providing successful models that can be emulated, and acknowledging the commitment of educational practitioners — these are the objectives for recognizing high-quality ESD projects in Germany as Official Decade Projects. An award scheme for these projects substantially contributes to building momentum for the UN Decade of Education for Sustainable Development (DESD) and can be easily replicated in other countries. The award scheme in Germany was instituted in the context of the national implementation of the DESD, which is coordinated by the German Commission for UNESCO and its National DESD Committee on the basis of a unanimous resolution by the German Parliament and with support from the Federal Ministry of Education and Research.

A wide range of activities

ESD equally affects learning in nurseries, schools and universities, in vocational and in-service training and at extracurricular educational and cultural facilities, as well as in research institutes, businesses and public administration. ESD also takes place outside educational institutions, such as in the family, among friends, through the mass media and in consumer advice. A wide range of stakeholders practice ESD. Accordingly, among the over 1,000 initiatives that have been awarded the title Official German Decade Project so far, we can find:

- Schools with a marked sustainability profile
- University courses on sustainable management
- Projects on initial and in-service vocational training for sustainable construction
- Initiatives for sustainable development in chemical industry careers
- Environment centres and outdoor education centres that move beyond environmental education and adopt ESD as an all-encompassing principle
- Solidarity projects for school students, which partner with countries from the South
- Cultural and media projects for children at nursery schools

Image: Freya Kettner, DUK

Preparations for an award ceremony for German DESD Projects

- Projects for senior citizens, where older people are trained to pass on their ESD-relevant knowledge to the younger generation
- Sustainable student companies
- Art projects in the context of sustainability.

Models for ESD

An Official Decade Project must fulfil the following criteria:

- The project practises ESD in the sense that it provides opportunities for acquiring the competencies necessary for the active shaping of a liveable present and future. It relates to the three dimensions of environmental, economic and social sustainability. A link to further aspects of sustainable development, namely participation, cultural diversity and international understanding, is desirable
- The project must target at least a local or regional audience, which must be clearly defined
- The project must lead to at least one specific outcome or product. The expected contributions to achieving sustainable development can be specified and demonstrated
- The project must contribute to two of the four objectives of the German National Plan of Action for the DESD:
  1. *Further develop the concept of ESD and broadly spread good practices*: the project realizes good practice in a clearly defined area
  2. *Link individual players and stakeholders in ESD*: the project brings together at least two partners to form a strategic alliance
  3. *Increase public visibility of ESD*: the project communicates ESD to a clearly defined target group
  4. *Strengthen international cooperation in ESD*: the project promotes ESD together with at least one international partner.
- The project must have a website that explains that ESD is at the centre of its activities and that details the specific competencies that can be acquired.

The overall size of the project is not among the criteria. Small groups of students with a convincing project can be recognized in the same way as major initiatives by ministries. Projects can apply for a renewal of the award after two years. They then have to meet stricter criteria so that participating projects are motivated to constantly improve their quality.

Ideally, the projects foster a concept of ESD that can be described as the acquisition of Gestaltungskompetenz ('shaping competence'), that is, the specific capacity to act and to solve problems. Learners who possess this competence can help through active participation to modify and shape the future of society, and to guide its social, economic, technological and ecological changes along the lines of sustainable development. ESD, thus understood, promotes the following specific competencies:

- To gather knowledge in the spirit of openness, integrating new perspectives
- To think and act in a forward-looking manner
- To acquire knowledge and act in an interdisciplinary manner
- To deal with incomplete and overly complex information
- To cooperate in decision-making processes
- To cope with individual dilemmas in decision-making
- To participate in collective decision-making processes
- To motivate oneself as well as others to become active
- To reflect upon one's own principles and those of others
- To refer to the idea of equity in decision-making and in planning actions
- To plan and act autonomously
- To show empathy for and solidarity with the disadvantaged.

The application process: how to apply

Projects can apply for an award through a form that can be downloaded from the German DESD website, www.bne-portal.de. The coordination unit for the DESD in Germany, set up by the German Commission for UNESCO, undertakes an initial review of the applications and passes them on to a jury composed of ten members

Image: Freya Kettner, DUK

Award ceremony in Germany for the 1,000th DESD project

from the National Committee for the DESD. The jury represents a broad range of stakeholders from public administration through non-governmental organizations to individual experts, and individually examines each application. Successful projects earn the right to use the label Official German Decade Project for two years. In an award ceremony, of which around four per year are held, they receive a diploma, a banner and a stamp with the German logo for the DESD, which they may use for their public relations activities. On average, between 50 and 60 per cent of all applications are evaluated favourably. At the midpoint of the DESD, over 1,000 projects had been recognized.

Benefits of the award scheme

The award scheme significantly raises the profile of ESD, especially at a local level. While presence in the national media remains a challenge for the DESD, hundreds of articles have appeared on individual decade projects in the local press. The German DESD coordination unit assists projects in their communication efforts, distributes their achievements through the Internet and printed materials and voices their interests and needs with regards to political representatives. Moreover, while no precise figures are available, we can assume that the projects function as role models, which has encouraged other stakeholders to initiate projects or to develop their existing projects further. The visibility of these projects all over Germany also facilitates networking between initiatives. The award scheme makes it easy for those who are looking for partners to identify high quality projects. The stricter criteria for reapplication also contribute to improving the quality of ESD in general. Projects have also reported that the quality certificate that the award entails has helped them to acquire funding from third parties. Finally, the award gives recognition to the many individuals active in ESD who often work on a voluntary basis.

From the point of national implementation of the DESD, the cost-benefit ratio, as it were, of the award scheme is excellent, which makes the scheme easily replicable in other countries. Limited resources are required for the staff in the coordination unit to review applications and organize the jury and award ceremonies. The outcome with regard to quality development and visibility for ESD is very positive. The projects have also drawn the attention of other partners who started their own initiatives for supporting good practice on the ground. For example, the drugstore chain dm, together with the German Commission for UNESCO, has already twice run a scheme through which over 1,000 small projects are supported with 1,000 Euros each. Moreover, Decade Projects serve as excellent examples when arguing for a broader inclusion of ESD in the curriculum. Internationally, the projects also serve as 'ambassadors' for practical work on ESD in Germany.

One of the challenges that remain to be tackled is a stronger investment into the quality development of the projects. The quality of the projects is generally rather high. However, many of them appreciate when they are offered guidelines and suggestions how they can expand and develop their understanding of ESD, for example, with regard to integrating a more complex view of sustainable development or with regard to their public relations measures. Local networking also needs to be strengthened. The latter is one of the areas in which we want to focus in the coming years when we, again with support from the Federal Ministry of Education and Research, attempt to build local networks and thus create regions for sustainable learning.

Cities and local authorities for the Decade

In addition to the Official German Projects for the UN Decade, the award category for 'Official cities and local authority districts of the UN Decade' was introduced in order to contribute to integrating ESD at a local level. In order to obtain the award, the city or local authority district, among other things, must have made the formal political decision that ESD is part of its political agenda; it should be active with relation to the four objectives of the National Plan of Action; it should define objectives and activities in ESD that relate to the existing educational setup in the city for the next two to five years; and specify which area of ESD is of particular importance for the local community. On the whole, the activities of the city or local authorities with reference to these criteria must be well above average. By 2010, 11 cities and local authorities had received the award.

Example one: Official Decade Project, YOOW – Young and Old for One World

The Berlin-based project, Young and Old for One World (YOOW), encompasses several generations. Senior citizens work together with marginalized young people and renovate out-of-use machines and work benches. The machines are then used by partner projects in Sierra Leone in their training facilities. For example, young seamstresses in Sierra Leone use sewing machines repaired by YOOW to open their own business.

Example two: Official Decade Project, Sustainable Student Company RGS Wool

Production, marketing and sales – at the student company RGS Wool of the Rudolf Graber School for Children with Special Needs in the town of Bad Säckingen, Germany, everything is in the hand of fifth to tenth graders. The students, over a period of several years, deal with sheep farming and wool production, from processing to the finished product and the sale of sheep's wool as environmentally friendly material. The wool is used to fill cushions and as an insulation material for solar-powered cookers. Leftovers are composted and returned to nature's lifecycle. The students run the company themselves and, in addition to learning about the sustainable use of resources and global interdependencies, they also acquire social and economic skills.

Example three: Official Decade Project, The Children's Rain Forest Group

The Children's Rain Forest Group at the Edith Stein School in Ravensburg, Germany has been working to protect the forests in the tropical areas of Costa Rica and Ecuador for almost 20 years. Among other activities, they collect money to purchase endangered forests and support local environmental organizations. In addition, the team promotes sustainable orchards in Germany. Cooperating with development organizations, they also produce juice from homegrown apples and fair trade mangos and passion fruits, thus supporting sustainable farming.

Example four: Official Decade Project, teaching and practising sustainability at Alexander von Humboldt high school

The Alexander von Humboldt high school in Hamburg, Germany, has integrated sustainable development into its school programme. Issues such as climate change, sustainable consumption and conflict management are regularly and systematically integrated into lessons. The school has also been officially audited for its sustainable management activities. It continuously works to reduce its use of natural resources. Since 1994, the school has been awarded the title of Eco-school in Europe every year.

From activists to the inclusion of ESD in the education system: progress and challenges still to be faced

Pierre Varcher, Vice President, Swiss Commission for UNESCO

Education for sustainable development (ESD) was born out of a joining of forces between groups and individuals sensitive to environmental issues, and those concerned mainly with promoting fairer human and social development. Switzerland has been fortunate in having networks of activists in both of these areas at an early stage.

On the one hand, a trend in thinking on environmental education had already developed in the 1970s, creating a group that held relatively consistent views on the subject of ecology. The debates that followed the publication of the report of the Club of Rome[1] contributed to raising awareness in Western public opinion on questions concerning the limited supply of natural resources and the risks of unbridled economic growth. As a result of the ensuing process of reflection that highlighted the impact of ecological factors on what appeared to be a world system, the defenders of environmental education advocated a method based on the transmission of knowledge about ecology, followed up in a second phase by an open discussion on much broader issues concerning the relationship of individuals with the natural world in an industrial society.

On the other hand, we have seen the emergence of an activist stream of development education oriented towards developing countries. Arising in the late 1960s from a growing political awareness brought about by the Biafra Crisis (1967-70) or the Viet Nam War (which reached a turning point in 1966), this form of development education came to replace the idea that decolonisation was just another topic to be included in geography and history curricula. Consequently, it sought to highlight issues of dependency in relation to economic structures and connections between the development of industrialized countries and developing countries. At the same time, supported particularly by the church as part of the struggle against apartheid and racism generally, education programmes were devised to develop the ability of all individuals to become politically active in a spirit of mutual respect.

Later, the activity of the *Forum Suisse pour un seul Monde*, founded in 1982, which presented itself as a group of 'partners in thinking, discussion and action', encouraged the spread of the idea of global education and even influenced similar groups in neighbouring countries. Global education was intended to be a pedagogical response to the economic globalization, which was threatening to transform culture, schools and education as a whole. This pedagogical reaction was geared towards introducing a model of social justice, and took up the ideas of giving a voice to the oppressed, promoting intercultural dialogue, and seeing development as a challenge as much for the North as for the South.

These two activist streams were not only active in non-formal and informal education (youth groups, for example) but also in formal education, in providing resources and education aids for teachers. Then, during the 1980s, as in many other countries, the promoters of both environmental education and development education became aware that they needed to broaden the scope of their respective causes. They realized that, for greater effectiveness and consistency, their individual struggles needed to be linked under the banner of ESD.

These activists, many of them volunteers, undoubtedly created the melting pot for ESD in Switzerland, and their work endures in all the individual initiatives of convinced and committed teachers and associations, which still form the nucleus of ESD activism. For instance, a number of establishments are launching school-based Agenda 21 processes or thematic projects, and associations continue to offer their services in proposing targeted activities for school classes.

Towards official recognition of ESD

These activists were quick to get involved at a political level with the aim of having ESD recognized as a priority throughout the education system. Gradually, the federal offices concerned (Environment and Swiss Agency for Development and Cooperation) have taken over from private institutions in building the foundations that had been supplying ESD resources and promoting educational activities.

But the inertia of the education system created some resistance, and the UN Decade of Education for Sustainable Development (DESD) has been the first opportunity to have ESD officially recognized at national level.

The sustainable development strategy adopted by the government (federal council) recognizes education as one of the ten priority areas. Within this framework, the Swiss Commission for UNESCO is trying to encourage the development of concrete initiatives, for instance by recognizing projects in the fields of non-formal and informal education, in particular.[2]

Image: © Swiss Commission for UNESCO

"...this planet seems to have a very built-up environment"

All the cantonal directors of public education[3] have included ESD among the ten points of their operational programmes.

To make best use of the resources available and to support practical projects at the national level, the Conference of Cantonal Directors and the six federal offices concerned have joined forces in an ESD Coordination Conference, which has formulated a set of measures for ESD for the period 2007-2014. To promote the inclusion of ESD topics and contents in primary and secondary schools' curricula, this conference is setting up a specialized ESD agency.

As part of this set of measures, an initial programme, which ended in 2010, has resulted in the development, reflection on and evaluation of ESD teaching units in the first cycle of secondary school. This involved a double-loop participatory process: taking up the given topic and structure, pilot schools in the German, French and Italian-speaking regions developed teaching sequences suited to their own circumstances and needs. Students of eight teacher training institutions then built on the sequences created by the pilot schools, taught them and evaluated them as part of their teaching placement. The results have been published.[4]

Again, as part of this set of measures, a three-year project is currently in progress.[5] It creates a network of almost all the country's teacher-training institutions (primary and secondary). The first aim is to conduct a survey to provide information on the basic ESD concepts currently promoted in training institutions and their scientific foundations, and on what has so far been achieved in implementing ESD in the field of teacher training, in terms of projects and implementation. The second stage of the project, taking this survey as a basis and considering the characteristics of the different regional curricula, will involve the proposal of foundational teaching materials for inclusion in initial and in-service teacher training at all educational levels. The aim of the third stage, based on the work and experience of the two preceding stages, will be to draw up recommendations for introducing ESD into training schemes. These recommendations will facilitate the task of defining a common concept of ESD and will contain guidelines on implementation.

A process of harmonising the curricula at compulsory levels of education is currently under way in each of the three cultural and linguistic regions, with the aim of ensuring that ESD features explicitly in the curricula.

Finally, several research teams are working on ESD-related issues, in particular: Zurich-based teams (R. Kyburz-Graber and U. Nagel), that of the *Interfakultäre Koordinationsstelle für Allgemeine Ökologie* (Interfaculty Coordination Unit for General Ecology) in Bern (http://www.ikaoe.unibe.ch/forschung/) and, at the University of Geneva, the team of the Science Teaching Laboratory (*Laboratoire de didactique des sciences/LDES*) (http://www.ldes.unige.ch/rech/DD/dd.htm) and the team involved in research in the Teaching and Epistemology of the Social Sciences (*Recherche en didactique et en épistémologie des sciences sociales /ERDESS*) (http://www.unige.ch/fapse/didact-sciensoc/recherche.html).

Challenges still to be faced

Globally speaking, ESD has very different connotations, depending on whether one views it from the perspective of a country of the South or of a more well-off country of the North. In the South, the issue is also one of achieving the Millennium Development Goals, one of which is to make primary schooling available to every child by 2015, and to reduce the flagrant inequalities in access to education between rich and poor, and between boys and girls. At the same time, there needs to be a reworking of study programmes and activities with a view to alleviating poverty, eradicating HIV/AIDS and raising awareness of environmental issues.

In the richer countries of the North, the DESD is an opportunity to give schools and the education system an emphasis less narrowly geared to training young people to perform effectively in the labour market. However, there is considerable tension between this objective and the demands of an economic and political system that often requires early selection based solely on cognitive knowledge in a few disciplines. ESD raises, for example, the whole question of the place of art and social sciences in the curriculum, or the importance of teaching pupils to participate in collective decision-making. It challenges the teacher to enable the largest number of their pupils to develop such values as responsibility, and concepts such as the common destiny of all the human beings who inhabit our planet.

The recent Bonn Conference[6] showed that the DESD is leading us into a totally new area, given that its aims are not as clearly defined as those of other programmes. For example, the first survey carried out at a global level reveals considerable tension in the richer countries of the North: some participants want to grasp the opportunity provided by the DESD to introduce major reforms of the education system as a whole in order to bring about profound changes in learners' basic values; others, meanwhile, would stick to opening up just a few areas of learning and of awareness-raising. We see the same thing in Switzerland: some people believe that ESD concerns schools and schools alone, and within this context only biology and geography teachers. But is it not rather an opportunity for all of us who are involved in education to ensure that learners in the classroom, in schools, in associations or in our neighbourhoods acquire the skills needed by citizens called upon to implement the principles of sustainable development?

Sweden's pioneering role in education for sustainable development

Marie Neeser, Ramboll Natura, in collaboration with Shivani Jain, CEE, India; Jim Taylor, SADC REEP, and Frans Lenglet, SWEDESD

For the past 40 years, Sweden has been one of the leading countries in drawing the attention of politicians and citizens alike to the negative ecological and environmental consequences of prevailing production and consumption arrangements within and between countries, rich and poor, and of the need to meet the resulting challenges before the human world exceeds its planetary boundaries.[1] The 1972 Stockholm Conference on the Human Environment[2] was the launch pad for Sweden's leadership role.

In the same period, Sweden has been a principal participant in scientific research about the interaction between the ecological/environmental, social and economic dimensions of 'developing countries' and in the debate about their governance. This research and public debate has been prepared, nourished and reflected upon by the many training and research programmes and specialized institutes related to the environment, ecology and related issues at Swedish universities.[3]

Sweden is a much appreciated and influential partner of countries in the Global South to address poverty alleviation, social and economic justice and environmental sustainability, practically and in policy terms, especially through the Swedish International Development Cooperation Agency (Sida).[4] Sweden has played a primary role in the Rio and Johannesburg Summits enshrining the principles of sustainable development.

In collaboration with international partners, Sweden is promoting education for sustainable development (ESD) as part of its overall international cooperation policy in two ways. The first is the Advanced International Training Programme in ESD in Formal Education. This Sida-funded programme is implemented by the Swedish consultancy company Ramboll Natura in cooperation with a number of universities and partner organizations in Sweden and the Global South.

The second example of the Sida-funded Swedish International Centre of Education for Sustainable Development (SWEDESD) at Gotland University, was established in 2008.

Advanced international training programmes in ESD in formal education

Education is a crucial response to issues of unsustainable development of our environment, societies and economies. Capacity development of practitioners in the formal education sector through ESD is a cost-effective and efficient measure to bring about this vital change.

The Swedish Government, through Sida, has since 2001 supported a number of international training programmes (ITPs) in Environmental Education and Education for Sustainable Development in Formal Education.[5] The training programmes are change-based and enable increased understanding of the different dimensions of sustainable development and the educational responses required. They also provide an opportunity to exchange knowledge and experiences at the interface between sustainable development and education/curriculum processes within the formal education sector. These insights are used to enhance and develop ESD initiatives in the participants' work contexts.

The training programmes are organized and managed by Ramboll Natura in partnership with a number of key institutions and organizations in Sweden, Africa and Asia. The overall structure and design of the programmes have been strongly supported by the Southern African Development Community Regional Environmental Education Programme (SADC REEP), implemented by the Wildlife and Environment Society of South Africa (WESSA) and the Centre for Environmental Education (CEE) in India. The United Nations University recently declared both of these institutions Regional Centres of Expertise in education for sustainable development. Other partners in Africa and Asia include Rhodes University in South Africa, Kenyatta University and Strathmore University in Kenya, Obafemi Awolowo University in Nigeria, the Nile Basin Initiative in Uganda, the Asian Institute of Technology in Thailand and, in China, the Centre for Environmental Education and Communication of the Ministry of Environmental Protection, the East China Normal University and Yunnan University.

In Sweden, programme implementation has been supported by a number of universities and organizations, including Chalmers University, Lund University, Malmö University, Mälardalen University, the Stockholm Resilience Centre, Stockholm University, Uppsala University and Örebro University.

More than 800 professionals within formal education from 42 different countries in Africa and Asia have taken part in the in-service training programmes since they began in 2001. The programmes are built around the participants' Change Projects, which become the key training tool towards bringing about positive change in the ESD work of the participating teams' institutions. The projects are workplace-based and enable participants to link their learning from the programme to their own work context. The 9-12-month, five-phase training programmes include national start-up workshops, scheduled training in Sweden

and in a selected country in Africa/Asia, and a final national workshop to report outcomes of projects.

Recently, the training programmes have been engaging an 'institutional team' including a participant, a co-participant and their supervisor. This has meant that, rather than simply developing the capacity of an individual, the institution itself is strengthened. This orientation to social change has been found to be very effective in supporting the post-training impact and application of new actions, practices and learning within the participating institutions.

Regular workshops for alumni of the training programmes are also organized in order to keep the ESD ITP network going and to follow up and mainstream the Change Project implementation. By sharing and analysing experiences, participants are better equipped to initiate and support change in the field of ESD in formal education. The alumni workshops serve as extensions of the training programme and as such, are often linked to international ESD conferences to enable participants to interact with ESD practitioners from all over the world.

In line with the UNESCO recognition that ESD will take many forms, as it plays out in local contexts, the training programmes have been designed to create space for participants to share and explore their locally responsive practices within the global context of the DESD. This approach requires a high level of participation from everyone involved, as they need to share experiences from their contexts and analyse presentations for activities and insights that could enhance their work. By organizing part of the scheduled programme in the African and Asian regions, a focus is given to locally relevant ESD practices, whilst also enhancing opportunities for regional networking, interaction and learning.

The planning and implementation of the training programmes have been collaborative processes from the outset. This has been achieved through partnering with regional or local institutions and organizations, supporting participants to define their areas of interest and focus, and by designing the programmes in such a way that the sharing of knowledge and creative ideas is optimized among the participants. The ITP programmes also make sure that analysis and reflection or monitoring and evaluation are given ample time so as to refine and strengthen the programmes and future courses. Such techniques also enable participants to review and strengthen their work through reflexive processes that bring about meaningful and effective changes within and throughout their institutions.

Change Project implementation

Follow-up on Change Projects in the regions has revealed many remarkable outputs, as can be seen in these examples from Africa:

In Lesotho, the Ministry of Tourism, Environment and Culture has set up Eco Schools, while the Lesotho College of Education has mainstreamed ESD into the teacher education curriculum through the use of Outdoor Learning Activities. The Ministry of Education is also working towards introducing a bio digester as a sustainable energy source at school level.

In Namibia, Hochland High School developed a booklet called *My carbon footprint* and Liina Nantinda, an ITP participant, was invited by the Prime Minister of Namibia to present the resource at the COP15 summit in Copenhagen in December 2009. The Minister of Education has also asked the school to assist in sharing this resource and associated climate change activities in other schools across Namibia. The Namibian National Institute for Educational Development (NIED) has developed an EE/ESD Electronic Portal and guidelines for integration of environmental learning/education across the curriculum. The portal is used extensively by the Namibia Environmental Education Network across Namibia and further afield. The University of Namibia (UNAM) has also developed a Curriculum of EE/ESD and an EE/ESD Information Kiosk, which is being integrated into the University's formal curriculum for undergraduate studies.

In Tanzania, the National Environmental Management Council (NEMC) has developed a resource entitled: 'Young farmers — safe use and handling of pesticides and application of alternative methods of pest control, a guide for primary schools'. At Chumbe Island Coral Park, a Ranger Teaching Pack has been developed and is one of the most comprehensive packs available in support of coastal education and poverty alleviation in poorer regions of Tanzania. The Tanzania Education Institute is developing innovative 'fuel-wood' replacement techniques through recycling in a Change Project called 'Waste paper management and development of paper coal'.

In Asia, the ITP Change Projects have brought about immense innovation in experimenting and researching ESD in formal education.

In Bangladesh, an ITP 2009 Change Project, 'Creation of students' elected council in 100 project schools' has supported the establishment of student councils that will become the major decision-making mechanism along with teachers and the School Management Committee (SMC), especially by ensuring participatory processes inside and outside the curriculum.

In Sri Lanka, the ITP institutional team from the National Commission for UNESCO worked with over 10 ASPnet[6] schools towards integrating the principles and values of ESD, not just in the teaching and learning in school, but in school management, policies, systems and even the buildings and campus in general. Two of the project schools received global recognition for 'Best Practice in the Region towards achieving MDGs through ESD'.

In China, ITP participants from the Compulsory Education Office of the Education Department in Shandong Province developed a Change Project titled 'Project for implementing environmental education and sustainable development education in the primary and secondary schools in Shandong Province'. This project became the formal EE and ESD policy in Shandong in April 2008.

In India, an experimental Change Project in 2007 titled 'A/V-based teaching-learning materials', supporting teachers who have to teach more than one grade at a time, was inspired by the teaching-learning principles and values of ESD. The initiative, now supported by UNICEF and called 'Saral Shiksha' (easy education), is currently in 100 schools in the state of Gujarat and will be implemented in over 7,000 more in the coming years.

Some key learnings from the programme

- Policy and practice are dynamic processes, which enhance each other: policy alone is not a sufficient instrument for change, but must be interpreted and implemented, so that lessons learned are applied in the policy formulation process
- An understanding of different educational traditions is essential for understanding the challenges and barriers to implementation of ESD

- Exposure to Swedish and international ESD experiences and front-line initiatives, sharing of regional experiences, understanding of change processes and access to professional networks supports innovative approaches and development of new ESD methods and processes.

Much gratitude is extended to the many partners supporting the ESD ITPs in both Africa and Asia but it is essentially the ITP participants themselves to whom we owe the most thanks. It is they who are changing the way people are living on the planet and ensuring that the future is sustainable and continues to support life on Earth.

The Swedish International Centre of Education for Sustainable Development

At the 2002 UN World Summit on Sustainable Development in Johannesburg, the Swedish Government announced that it would undertake special efforts to promote the concept and practice of education for sustainable development, internationally and domestically. In addition to the International Training Programme on ESD described above, this led to the international consultation entitled 'Learning to change our world', held in Gothenburg in May 2004. The consultation was followed by five international workshops on learning for sustainable development, all held in Gothenburg. The fifth workshop produced the Gothenburg Recommendations[7] inviting and challenging governments, civil society and in particular, educators all over the world, to prioritize processes that develop and strengthen education for sustainable development. The Gothenburg Recommendations were officially submitted to the UNESCO World Conference on Education for Sustainable Development in Bonn, Germany, in April 2009.

In 2008, as a result of another set of efforts, the Swedish government commissioned Gotland University in Visby, capital of the island of Gotland in the middle of the Baltic Sea, to establish the Swedish International Centre of Education for Sustainable Development (SWEDESD), for which it made available an initial funding of SEK 75 million.

SWEDESD's mission is to facilitate the development of capacity among practitioners, decision makers and researchers associated with education for development, to formulate, implement and evaluate relevant, appropriate and effective policies, initiatives and activities.

The activities of SWEDESD support the further development and practice of education for sustainable development through training, learning, research, evaluation, information exchange, networking, partnerships, policy analysis and capacity development. They are designed and implemented in close cooperation with national and regional partner organizations in countries in the Global South with which Sweden is engaged in development cooperation, while building on experience and expertise available in Sweden and elsewhere. Currently, the India-based Centre of Environmental Education (CEE) and the South Africa-based Regional Environmental Education Programme of the Southern African Development Community (SADC REEP) are SWEDESD's key partner organizations in Asia and Africa.

SWEDESD contributes to the official Swedish development assistance policy, operating within the international development frameworks of the UN Millennium Development Goals, Education for All (EFA) and the DESD.

Integrating the principal components of ESD

In essence, ESD rests on the combination and integration of two principal components. The first component is the 'substance' of sustainability and sustainable development. The second component is the multitude of approaches and methods for acquiring knowledge of sustainability and the skills and attitudes needed to move sustainable development forward. It is in the integration of these two components, that the strength of ESD will manifest itself. SWEDESD's niche is to make the best ESD insights and practices from around the world available to ESD practitioners.

As far as the content component is concerned, SWEDESD and its partners are focusing on concepts and issues of ecosystem services and strong sustainability; particularly on how investing in and accounting for ecosystem services can enhance sustainability and, consequently, livelihoods and well-being. With respect to the method component, they are focusing on clarifying the principles of and conditions for effective educational processes for change towards greater sustainability, emphasizing situated learning and the importance of agency.

Programmes and activities

SWEDESD is a new organization, which is gradually finding its place in the international networks of organizations of practitioners, researchers and policy makers wishing to make ESD and its constituent components part and parcel of daily educational and learning realities. Its portfolio, developed and implemented with its partners, currently contains four main programmes:

- A professional development programme on education in and for sustainable cities
- An international flagship course on ESD
- A professional development programme on ecosystem services, strong sustainability and agency
- A professional training and certification programme for sustainability learning facilitators.

SWEDESD's research and development programme includes projects on:

- Climate Change Education Research (with Uppsala University, Rhodes University and the University of Zambia)
- The 'Pattern Laboratory Approach' to ESD initiatives and projects (with Global Action Plan International)
- Early Childhood Education and Sustainability (with Gothenburg University and OMEP)
- The use of simulations and scenario building (with Gotland University's Game Design department)
- Stage art for sustainable development.

An active web presence (www.swedesd.com), which is continuously growing in depth and breadth, supports SWEDESD's programmes and activities.

Sweden's continuing role in ESD

Through its direct and indirect support for the DESD, Sweden has emphasized that education, in its many manifestations and throughout life, is one of the most strategic means for people to gain understanding of the interaction between the social, economic and ecological dimensions of development. The activities outlined in this article are evidence of Sweden's commitment to ESD.

Structural solutions for ESD in Sweden

Carl Lindberg, Special Advisor to the Swedish National Commission for UNESCO on ESD

In Sweden, the concept of education for sustainable development (ESD) was first established in 2000. In March of that year, education ministers from the Baltic Rim countries met in Stockholm at the invitation of the Swedish government. This meeting came to be part of the Baltic 21 process, which had been launched four years earlier with the aim of creating an Agenda 21 programme for the Baltic Sea and the region surrounding it. The Baltic, an inland sea, had become severely polluted. Powerful long-term measures were considered essential if it was to be restored. Seven reports from different sectors relevant to this restoration effort had been prepared, urging among other things that the educational systems in the countries concerned be made aware of the problems and be encouraged to help solve them. The March meeting in 2000, which took place at Haga Palace in Stockholm, adopted the Haga Declaration.

The importance of education for environmental work had long been emphasized in Sweden. Its role had been noted as early as 1967 in the preparatory documents for the UN Conference on the Human Environment held in Stockholm in 1972. The action plan from that conference, therefore, contained a section on the importance of environmental education. The intentions of the Swedish government were manifested more clearly in 1990 in one of the general provisions of the Education Act, stating that: "each and every person active in the school system shall promote respect for… our common environment". The national curricula for compulsory and upper secondary schools, adopted in 1994, placed emphasis on environmental issues, but also referred explicitly to what is now called the social dimension in sustainable development. In these documents, however, the actual term 'sustainable development' is only used in reference to the environmental dimension.

Image: Anna Lundh and Swedish National Commission for UNESCO

The Bonn Conference on ESD, 2009

Following the Rio conference, the concept of sustainable development was spread afield through the successful promotion of Agenda 21. Sweden's high level of environmental awareness, already evident at the time of the 1972 conference in Stockholm, is often attributed by international observers to the country's time-honoured right of common access. This 200-year-old principle allows citizens to roam more or less freely through the countryside, while showing due consideration for the environment.

The education ministers who met in March 2000 decided to develop an action plan for the provision of education and training on sustainable development in the Baltic Sea region: Baltic 21 Education. Efforts to this end were led jointly by Lithuania and Sweden. Three working groups of committed participants developed an action plan that was subsequently adopted at a new meeting of education ministers at Haga Palace in January 2002. The process of developing this action plan helped make ESD known among the various countries' education ministries and non-governmental organizations (NGOs). The plan was circulated to all compulsory and upper secondary schools in Sweden and to all Swedish higher education institutions. Unfortunately, it was not followed up by information efforts of any great note. It did, however, help ensure that university researchers concerned with environmental training in international networks redirected their work towards ESD. This applied both to those involved in largely Nordic networks and those who had arrived via the Organisation for Economic Cooperation and Development's environment and school initiatives.

To strengthen ESD work in the Nordic countries, the Swedish government decided, as early as April 2002, that while presiding over the Nordic Council of Ministers in 2003 it would host a conference on ESD in Karlskrona, Sweden in June. The Baltic Rim countries were well represented at this meeting.

The proposal that emerged from the Johannesburg summit in September 2002 on the UN Decade of Education for Sustainable Development (DESD) had a marked impact on ESD efforts in Sweden, in a variety of ways. At the summit, the Swedish Prime Minister invited the international community to a conference on ESD, and this was duly held in 2004.

Later in 2002, Sweden was invited by the UN Economic Committee for Europe (UNECE), which has 56 member states from Caucasus to North America, to join Russia in leading the initial work on developing an ESD action plan on its behalf. Sweden accepted, and the following year, at a meeting of environment ministers in Kiev, Ukraine in May, a statement was adopted emphasizing the importance of ESD. This was followed up at the ministerial meeting in Vilnius, Lithuania in March 2005 with the adoption of an action plan for UNECE that has since become one of the foremost drivers of ESD in these countries.

Learning to Change Our World was the title of the international conference to which the prime minister had invited all countries in Johannesburg. It took place in Gothenburg on 4-7 May 2004 and was strongly supported by the two universities there, both of which had been encouraging the development of ESD for several years. The meeting attracted 350 participants from 75 countries. Since then, the universities have organized five international follow-up conferences, resulting in October 2008 in the Gothenburg Recommendations.

The preparations for the Gothenburg conference were undertaken by a government committee that was also charged with recommending ways in which ESD work in Sweden might be strengthened. One of the proposals involved amending the Higher Education Act so as to require the country's universities to promote sustainable development. Another recommendation was for Sweden to establish a UNESCO institute for the promotion of ESD in international development aid activities.

Both these proposals have been implemented. As of 1 February 2006, the law states that: "in their activities, higher education institutions shall promote sustainable development that ensures present and future generations a healthy and good environment, economic and social welfare and justice". Accordingly, many of these universities and colleges have developed policy documents of their own aimed at fulfilling the intentions of this provision. These documents are viewed as an extension of the institutions' voluntary commitment to greater environmental awareness in the 1990s, as reflected in their support for various university declarations at the time. In April 2010, legislative regulation was strengthened further when the present government reiterated the formulation cited above in revising the Higher Education Act.

Swedish universities and colleges have long offered a wide range of programmes and courses in pursuit of learning for sustainable development. About a third of all courses discuss sustainable development in some form. The Higher Education Act has provided a basis for the special policy documents adopted by many universities and colleges in support of ESD. Each department pursues work in this area in its own way. Often, department heads appoint a special contact officer to promote development.

The goal of many universities is to integrate sustainable development, both as a perspective and as knowledge context, into all training programmes and relevant courses, as well as to give students a chance to supplement their education with elective courses in sustainable development. At some universities, work reports fulfil the requirements of the Global Reporting Initiative. Sometimes a self-assessment tool, the Audit Instrument for Sustainability in Higher Education, is used.

But despite all the legal wording, special policy documents, expectations and support on the part of university management, the decisive factor is the individual teacher's willingness and ability to ensure that the tuition provided is informed by the ideas underlying the ESD concept. In practice, responsibility for bringing these ideas to fruition at higher education institutions, both in Sweden and elsewhere, lies to far too great an extent in the hands of individual enthusiasts who seek to drive matters forward.

In Sweden there are three UNESCO Chairs for ESD, based at Lund University, Chalmers University of Technology and the University of Gothenburg. The latter focuses on promoting ESD in early childhood education.

In October 2007, the government assigned the Swedish International Development Agency, Sida, to set up an institute, SWEDESD, with the primary aim of promoting ESD in Sweden's development aid programme. SWEDESD, which is located on the island of Gotland in the Baltic, is now nearing the end of the build-up phase. The Global School/International Programme Office for Education and Training, which is also financed by Sida, is closely involved in the promotion of ESD within the Swedish school system. It bases its activities on the various school curricula and syllabuses.

The National Agency for Education encourages ESD through its triennial accolade, A Sustainable Development School, established in 2005. To be awarded this distinction, a school must organize its work so that all pupils and staff are given the opportunity to take an active part both in formulating sustainable education goals and in the planning, implementation and evaluation processes.

ESD is also an important component in the activities of the Swedish National Council of Adult Education, with its study associations and folk high schools. These institutions operate independently of the government authorities but receive government grants.

The Keep Sweden Tidy Foundation is the Swedish branch of the international organization Eco-Schools and has some 2,000 affiliated schools and preschools. The Swedish authorities financially support their activities. The Swedish section of the World Wide Fund for Nature, which is the country's largest environment and nature conservation organization, strongly promotes ESD as part of its operation, focusing both on schools and universities.

Image: Swedish National Commission for UNESCO

UNESCO General Conference 2009

Since 2007, the Regional Centre of Expertise on ESD in the Skåne region (RCE Skåne) has been part of the international network for promoting sustainable development that was set up on the basis of ideas from the UN University in Tokyo. Discussions are currently under way in other parts of Sweden on the establishment of new RCEs.

The Baltic University Programme is an international network bringing together 225 universities in the Baltic Sea region in an educational partnership based on sustainable development. CEMUS, the Student Centre for Environment and Development Studies, is a unique institution at Uppsala University that also bases its activities on sustainable development but which is largely run by students.

The Graduate School in Education and Sustainable Development is the result of a research partnership between eight Swedish universities working in this field, the aim being to establish a research environment of international importance. Networks promoting ESD have also been set up among teachers, teacher trainers and researchers.

The Life-Link Friendship School, based in Sweden, is an international partnership uniting schools from different parts of the world, all of which seek to encourage ESD. Its project focusing on nine Arab countries was chosen by UNESCO as an example of good practice at the organization's 2009 conference in Bonn.

For the Swedish National Commission for UNESCO, the ESD issue is a priority. Via a well-established network of contacts with Swedish agencies and NGOs, this body has exploited opportunities for promoting ESD throughout the DESD. It has also stressed the importance of ESD both when engaging in international cooperation and at UNESCO's general conferences, including the Bonn meeting in 2009, at which Sweden was well represented.

The UN General Assembly's decision to proclaim a special decade for ESD has always received strong Swedish support. It has meant that the importance of environmental education and ESD has been brought to the fore to an unparalleled extent, both in Sweden and internationally.

Sweden's experience of ESD promotion is doubtless similar to that of other countries around the world. Strong executive support and encouragement is essential, from various political levels and from far-sighted politicians and officials in the education sector. At the same time, however, this must be met by committed, responsible teachers, students and parents who are prepared to acts as a driving force in preschools, schools, universities and the business sector. Sweden, which has the potential to promote ESD successfully, must strive still more vigorously to ensure that our entire education system is informed by the sustainable development perspective. Together, regardless of our place in the education system, we must constantly keep the future of our children and grandchildren in mind.

There are six ESD proposals that should be implemented based on Sweden's experience of ESD promotion work during the period 2000-2010:

1. Ministers of Education, and their Ministries, should develop action plans on ESD, giving government agencies clear roles and responsibilities. All relevant legislation and regulation must reflect the importance of ESD
2. Members of Parliament should raise the importance of ESD with their government
3. Politicians in local and regional government, especially those responsible for school issues, need to be made aware that ESD is an important dimension of quality
4. National government bodies and agencies for international aid and cooperation, in their negotiations with the countries receiving support in the education area, require that educational activities be informed by the perspective of sustainable development
5. Conferences dealing with any aspect of sustainable development should always discuss the importance of the role of education
6. University management needs to adopt a policy for ESD work at institutions, but also take part in discussions and debates with teachers and researchers on how such a policy might inform the institution's entire range of activities.

The DESD represents a golden opportunity for everyone (committed teachers at all levels, school and university heads, students, education ministers and other education politicians throughout the world) to take these matters seriously, and to work with others to change all levels of education systems, so that when students have completed their training they will truly possess the ability and will to work actively for sustainable development in today's society.

From personally relevant experience to action research for sustainable education

Ilga Salīte, Inga Gedžūne and Ginta Gedžūne, Institute of Sustainable Education, Latvia

The origins of the Institute of Sustainable Education (ISE) can be traced back to 2003, when a group from the Faculty of Education and Management (Daugavpils University, Latvia) founded it as a scientific research structural unit of the Faculty. The founders of the Institute sought to establish a platform for scientific inquiry which has now become a globally recognised institution, working in international cooperation on reorientation of teacher education to address sustainable development and development of educational research for education for sustainable development (ESD).

There were three historical preconditions for the establishment of ISE as a research and academic learning environment in order to seek insight into ESD:

- From its establishment (1996), the Faculty accumulated experience in action research that was used as a basis for programme design and development of a holistic approach to educational research
- The Institute's staff had personal and professional interest in a highly developed inquiry into reorientation of teacher education to address sustainable development, which was especially strengthened after the Faculty's involvement in the global UNESCO University Twinning and Networking Programme (UNITWIN) teacher education project (2000)
- Establishment of the Institute was accepted by its staff as a unique opportunity to realise their mission — participation in the creation of new knowledge that would make education more sustainable with a focus on seeking wisdom about how to live in harmony with the world.

When the Faculty shifted its focus to environmental education, sustainable development and teacher education for sustainable development, the next step was to broaden the research methodology from mainly quantitative studies, adopting an orientation towards action research. In recent years, action research carried out in the Institute has been based on learning from lived experience and reflection on personally relevant experience. It has permitted the development of trust in the group's ability to learn and find insights for the

Latvia's Institute of Sustainable Education at UNESCO World Conference on ESD, 2009, Bonn, Germany

Agreement to hold the Eighth JTEFS/BBCC conference at UNESCO headquarters in Paris, France

Images: © Ilga Salite

common aim of sustainable development and to apply these insights to enhance the dimension of sustainability in education. Orientation towards sustainable development is compatible with the notion of hope, which is a uniquely human capacity and emerges through personally relevant experience as an orientation towards sustainable goals in future aspirations.

The path chosen for the Institute's development required a sound scientific basis. For this reason, in 2002 the Institute established the *Journal of Teacher Education and Training*. In time, the Journal expanded its scope, gradually acquiring the dimension of education for sustainable development, and in 2007 it adopted a firm focus on sustainability in teacher education. Since 2007, the Journal has been known as the *Journal of Teacher Education for Sustainability (JTEFS)*. It has become a forum for the meeting of different views, ideas and research to promote the further development of studies and practice of teacher education in all areas of formal and non-formal education in relation to sustainability. The articles published in JTEFS explore the content and forms of professional and academic teacher education, problems and tasks of teacher in-service education and other issues to help teachers to become responsible mentors for sustainable development.

The editorial board of JTEFS unites more than 40 experts in the field of teacher education and sustainability from such countries as Latvia, Lithuania, Estonia, Finland, Norway, Germany, Hungary, the Netherlands, Malta, USA, Canada, Brazil, Mexico, Costa Rica, Jamaica and South Africa. Over the years, JTEFS has gained international recognition and is now available in the electronic databases CABI and SCOPUS and, since 2009, on the electronic platform VERSITA.[1] Presently JTEFS has positioned itself and become publicly known as a scientific journal dedicated to the topic and mission of reorienting teacher education to address sustainability.

More diverse scientific research and practical sustainability-related experience has also been reflected in the two volumes of collected articles *Education and Sustainable Development: First Steps Toward Changes* (2006 & 2007) published by the Institute in collaboration with its international partners. These volumes represent an interdisciplinary view of researchers from various countries on the theory and practice of education and sustainable development, inspiring a complementary approach and modelling the frame of reference for implementation of the holistic conception of sustainability in education. In spring 2010 the Institute established a new scientific journal, *Discourse and Communication for Sustainable Education* (DCSE), an international, peer-reviewed journal that provides a forum for the examination of policies, theories and practices related to discourse and communication for sustainable education. The diversity of this journal is apparent in the variety of its theories, methods and approaches, and its avoidance of limitation to one school, approach or academic branch. It welcomes papers that explore inspirational ideas in sustainable education and are written and presented in innovative or experimental ways.

In 2005 the Institute established the Baltic and Black Sea Circle Consortium in Educational Research (BBCC). The consortium was created as a network for discourse and communication in the international collaboration regarding teacher education and research in education for sustainable development. It unites teacher education and educational research institutions, initially drawn from the countries around and near the Baltic Sea (Latvia, Lithuania, Estonia, Finland and Germany) and the Black Sea (Hungary and Turkey). In 2005, representatives of BBCC contributed their experience to the 'UNESCO Educational Sector Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability', the preparation of which

BBCC president Ilga Salite and ISE director Dzintra Iliško at the opening of the 7th JTEFS/BBCC conference "Sustainable Development. Culture. Education", 2009, Daugavpils, Latvia

Welcoming Anita Pipere, the first editor of JTEFS journal, at the 7th JTEFS/BBCC conference in Daugavpils

Images: © Inga Belousa

Image: © Peter Purg

BBCC members at the symposium of the International Network for Reorienting Teacher Education towards Sustainability, 2010, Paris, France

was lead by UNESCO. Since then, it has grown to include Slovenia, Slovakia, Poland, Greece, Italy and Spain and representatives of other countries beyond Europe. More recently, BBCC has acquired international, multicultural and inter-disciplinary dimensions, thus permitting it to increase the number of coordinating countries and share responsibility among them. It has become a close-knit family of like-minded enthusiasts from universities, schools, preschools, e-learning, media education and education management institutions, as well as policy makers and art and institutional managers.

The BBCC family meets regularly during the annual JTEFS/BBCC conferences. The next conference will be held in 2011 at Siauliai University (Lithuania), followed by the University of Eastern Finland in 2012. These conferences allow for a great diversity of contributions, with the main emphasis placed on synergy between efforts made to reorient teacher education towards sustainability and research in the field of ESD by seeking to enrich research methodology and methods to be used in the current context of ESD. The proposed sections entail a wide scope of research and practice aspects initiated during the previous conferences. Time is afforded for everyone in attendance to exchange ideas, share research results and introduce new research and development projects.

Around the nucleus of ISE and BBCC, through the annual host conferences, JTEFS and the collection of articles, a fruitful discussion and cooperation has ensued, which unites representatives of various countries and disciplines. Teachers of various subjects at different school levels, social workers, ICT specialists and policy makers discuss the notions of sustainability, sustainable development and education for sustainable development, establishing their link with the respective disciplines and constructing a multicultural and interdisciplinary view on these issues. Thus an opportunity is provided for new members to make their first steps and discover that sustainable education ought to unite metacontent (values, frames of reference etc.) and content issues (ecological, social, economical and cultural dimensions and management of their interaction), and the results of the research are reflected in ISE publications.[2]

The Institute's activities are now implemented on three levels:

- Impact on the national level (co-operation with Latvian higher education institutions, the Ministry of Education and Science and UNESCO National Commission, schools and the community)
- Coordinating activity for sustaining co-operation in the established Baltic and Black Sea Circle Consortium in Educational Research (BBCC)
- Active participation in global cooperation networks (UNESCO/UNITWIN project network for reorientation of teacher education to address sustainable development, the global Earth Charter network for development of teacher education and lifelong education programmes, and collaboration with EU and Pacific region networks).

The landmark event for the Institute in 2009 was a presentation at the UNESCO World Conference on Education for Sustainable Development in Bonn (Germany). The Institute's experience in building the capacity for international partnership in ESD led to its recognition by the conference as one of five successful experiences in education for sustainable development in the region of Europe and North America.[3] International audiences have acknowledged the Institute's outstanding practice in the category of sustainability as a prime example of successful international and national partnership and collaboration to promote research and

The Eighth JTEFS/BBCC conference "Sustainable Development. Culture. Education", 2010, Paris

Paper presentation session during 8th JTEFS/BBCC conference in Paris

Images: © Peter Purg

implementation of sustainability and sustainable development in higher education (and notably teacher training) through organization of the learning and research environment, design of appropriate methodology, content and metacontent of study courses and programmes that are based on the principles of sustainability.

The Institute's activity is characterized by two general spheres of activity: research and education.

The Institute's approach to research

- Historically, this has involved application of the principles of ecology, integration, spirituality and sustainability in theory building and research
- Currently, the Institute is engaged in the application of educational action research to reorient teacher education for sustainability, creation of a learning environment that fosters development of research skills and research identity of teachers in the context of ESD. Action research, as the environment and strategic approach for reaching educational objectives, permits the creation of a research and learning environment equipped for identification of personal experience and engagement in reflective discourse and communication, thus creating new knowledge and searching for wisdom for ESD and implementing a holistic approach to organization of education, increasing its sustainability through synergy among research and learning activities and reflection.

The Institute's approach to education

- Designing study programmes for BA, MA and doctoral degree in Education intertwined with the idea of ESD
- Teaching in-service and pre-service teachers, educational administration staff etc. for BA, MA and doctoral degree in Education using ESD framework
- Using action research as a basis for designing study courses where non-formal and informal activities are integrated in formal studies, thus developing students' flexible thinking and reflexive abilities, and creating new sustainability-oriented frames of reference
- Leveraging the experience of the Institute's staff, which has been accumulated and enriched over many years and is disseminated in publications and websites all over the world.[4,5,6,7,8]

The Institute's accumulated experience has culminated in the creation of a research and learning environment that offers discovery of new knowledge and ESD wisdom through cooperative relationships. The Institute's activity provides an opportunity to answer the question: "How can everyone effectively participate in promotion of sustainability, locally and globally?" Moreover, the results achieved by a small country and a small regional university can convince researchers and educators from bigger countries and universities that every university can successfully become involved in solving global problems, overcome historical barriers, and can find its way and mode of action in its own time and place and in close cooperation with partners from various parts of the world, for the common aim of increasing sustainability in education.

The Institute's vision and experience need to be broadened and spread since the world is characterized by an established tradition of unsustainable development and education has no alternative but to reorient consciousness and action to address sustainability, producing wisdom and thus directing society towards sustainable development.

Beyond boundaries: implementing education for sustainable development in language arts

Lorna Down, Senior Lecturer at the Institute of Education, University of the West Indies

To transform a world requires at the very least a different way of thinking about and relating to self, others and the space we all occupy on this earth. A vision of the quality education needed to enable such new thinking and relationships has been promoted in the United Nations Decade of Education for Sustainable Development (DESD). The goal of the DESD is to "integrate the principles, values and practices of sustainable development into all aspects of education and learning [in order to] create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations."[1]

Teaching language arts with that vision and that goal in mind — in other words, having an education for sustainable development (ESD) approach to teaching — means integrating sustainable development concerns, issues and principles in courses in order to develop citizens with awareness and particular values: citizens who are attentive to social justice, equity, peace and the conservation of the earth, and who act in ways that create a sustainable society.

The ideals of ESD in language arts can be introduced effectively to both pre-service and in-service teachers but the approach can also be adjusted to suit students at any level.

One of the main themes identified in the DESD International Implementation Scheme is that of 'peace and human security'. A focus on that theme is appropriate, given the level of violence in some communities. Beginning by introducing the concept of sustainable development to students in a number of ways,[2] it became a major part of the context for the study of literature texts. The discussion of these issues was then moved from the safe space of the text and deliberately shifted to that of 'real-world' local experiences. This allowed for a space in which the student teachers could explore freely their responses to violence in the society. Emerging from this, the difficulty of handling conflicts was recognized and this led to the organization of a conflict resolution workshop. Additionally, students planned 'peace projects' which offered an alternative response to the situation.

The basic principles emerging from this experience remain useful. Beginning with limited knowledge of sustainability — a general science background seemed inadequate for the task of understanding the 'science' of sustainability; moreover, specialization was in the arts, in literature, which initially appeared marginal to the task of educating for sustainable development. In actuality, it was discovered that literature, like every other discipline, has a unique contribution to make towards creating a sustainable society. Literature's special contribution of emotional and spiritual development, allowing for insights into self and others through 'walking in another's shoes', for clarifying values and attitudes, among other things, is essential in building the foundation for a sustainable world.

Furthermore, the actual involvement and teaching with earth in mind[3] encouraged the research needed to extend one's knowledge base.

Another basic principle is that the context for the study of the texts has to include the concept of sustainability. This involves examining the concept of sustainable development through relating it to local and regional issues, philosophies, beliefs and ideologies as well as to its global context. It means, for example, taking into account and addressing those local 'end-times' religious beliefs which posit that the earth will be destroyed and which appear, therefore, to nullify the idea of a sustainable future.

It also became clear that although the exploration of general sustainability issues is valid, a clear focus on a specific theme, related to students' 'real-world' experience and responded to by a specific action plan, is more useful. In the latter instance, student teachers' engagement with sustainability became more meaningful as we worked with the concrete.

The wider context

Attempts were later made to deepen the approach. At first, the theme of peace/violence was situated within the sustainability frame simply by using that frame as a context. But understanding more clearly the concept of sustainability to mean the interconnectedness of the social, the cultural, the economic and the physical environment as an ecosystem, we had to reflect on how the issue of violence also related to the environment. Tropical hurricane Gustav's destruction of sections of Jamaica, suggests how.

The social and economic situation of poverty, the lack of knowledge and the dismissal of traditional practices have contributed to violence to the earth and the violence 'returned'. 'Wrong' thinking, specifically wrong choices of building in or near to river beds, led to the destruction of many lives during Hurricane Gustav.

Relating the theme to the wider context, to uncover its connections — environment, social and economic — and situating it within the world beyond the classroom can also set the context for a community action project (for example, advocacy), working with communities

Image: © UNESCO, Gary Masters

Child participating in the early childhood education Roving Caregivers Programme in Jamaica

to persuade them to change their way of life. Community action projects undertaken by graduate students have included:

- Developing peace through literacy classes
- Creating green areas; raising awareness of sustainability in a school through a recycling project
- Vegetable gardening
- Reshaping a conservative church's mental space to include a HIV/AIDS project.

Students are also encouraged to read more deeply and widely the broader environmental, social and economic texts, so that they are able to recognize other acts of unsustainable living — such as hotels built on fragile coastlines, or hotel activities that destroy reefs, and the economic and political power behind this — and to identify ways to intervene. In other words, student teachers are encouraged to examine further the concept of sustainable development, understanding that degradation of the environment (i.e. the ecological and biophysical life support systems) places human beings at great risk. They are encouraged to reflect on the connection between the environment and social/cultural and economic development, to see literature and its texts as part of the cultural capital, related to all aspects of this 'ecosystem'.

Literature texts are thus read/taught with the awareness of this interconnection. Applying knowledge of various literary theories, for example eco-criticism and post-colonialism, students deepen their interpretation of the literature texts as well as the actual social, economic and environmental texts of their world. In reading the story of Limbo Island in *Blue Latitudes*, a collection of West Indian short stories, for example, one focuses on the representation of the physical environment in relation to the socio-cultural and economic environment. Limbo Island relates the story of a man caught up in the American dream of 'making it' (a reverse Willy Loman figure as in Arthur Miller's *The Death of a Salesman*) who then discovers how empty the dream is because he has sold his soul for it. A broad eco-critical reading uncovers the growing loss of land and culture of a people to tourism.

The economic drivers of tourism lead to the destruction of the natural environment as well as the social and cultural environment. Conflict between economic sustainability on one hand, and on the other hand, social, cultural and physical sustainability is thus represented by the writer. For Caribbean and other small island people where tourism is the number one foreign exchange earner, such a text exposes clearly the tensions and the dangers of unsustainable tourism. The point made here is that connecting the specificities of the subject with the awareness of sustainability can lead to students becoming citizens who are far more aware of the ambiguities and tensions in their society and are thus enabled to take meaningful action to address these. Equally importantly, the students can begin to articulate an eco-critical resistance to development that threatens a sustainable future and also to imagine an alternative future. This is a major part of what it means to educate for sustainability.

Image: NASA

Hurricane Gustav over the Caribbean, 29 August, 2008

Literature through the lens of sustainability

Teaching and learning literature is usually informed by the subject specifics (elements such as theme, setting, style etc.) as well as by the subject's core purpose (pleasure, beauty, development of the imagination, the experiencing of the other's world, and the development of one's identity). Incorporating a sustainability perspective and focus, we find that the way we read the text changes. The text 'opens up' and is enlarged when read with a 'sustainability lens'.

Implementation of ESD in the literature classroom serves to:

- Teach texts, paying attention to the specific demands of the subject, for example, its elements (themes, characters, setting, plot and style)
- Employ theories relevant to the study of the text, for example, eco-criticism, which is the study of the relationship between literature and the physical environment[4]
- Have at the core of the teaching the knowledge/awareness of the sustainability concept, issues, principles and actions
- Uncover the interconnections of social/cultural, economic and environmental aspects, enabling students to read their world with a different lens and encouraging them to take action to change what destroys their world.

There are changes in how the text is read and how the subject is taught. The result is a deepened classroom experience, one that extends to the wider world and helps students engage at various levels with their world. The knowledge, skills, values, perspectives and action[5] related to the study of the literature are grounded in an understanding of what it means to act in ways that will make for a sustainable world.

There are, of course, tensions between balancing the specificities of the text and the 'sustainability' aspects (between keeping the text bound by the classroom and situating it in the wider environment where it truly resides).

The basic principles for infusing ESD into literature hold true for language: establish an ESD context, explore sustainability issues and themes in material used for language classes, focus on a specific theme, relate the theme to students' real-world experience and take some action to address the particular issue.

A number of language education theories such as whole language, the learning experience approach and communicative language teaching emphasize the importance of attending to the functionality of language. Keeping in mind, therefore, that language is basically a tool for communication, we can approach language education as engaging with real-world tasks, including 'sustainability tasks' — for example, reflection, advocacy, disseminating information, problem solving and critical thinking.

Teachers of language are usually required to develop skills in reading, writing, comprehension and grammar as a means of aiding communication. To do this effectively, they will have to contend with the choice of material, the types of language tasks and the approach or teaching methodology.

'ESD-embedded' literature can provide the content — the reading material for teaching language. This means literature, in the widest sense of the word, that is 'sustainability indexed'. Here teachers identify the environmental, social, cultural and economic realities represented in the content. They examine the material eco-critically, noting the interconnections of the environmental, social, cultural and economic aspects. Students are thus provided with material related to or about the critical issues of our time.

Learning and community

Equally important is the teaching approach. Focusing on one theme, teachers can engage students in language learning by using it in a significantly meaningful way. Linking learning with action projects in the community will help to accomplish this. Imagine using the story *Limbo Island* (mentioned earlier) to teach both literature and language. Through exploring the theme of sustainable tourism or eco-tourism, the teacher can motivate students to become involved in research and reports on sustainable tourism, surveys, interviews and dialogue with tourist interest groups. Students can learn to write advocacy letters, compile stories of traditional practices and create photo stories. Students are now attuned to the functionality of language and by engaging in project-based learning interface with their community to improve its quality of life, they improve their own.

To implement education for sustainable development in language arts is to connect deeply with community; it is to situate oneself and one's students beyond the boundaries of the classroom into the wider community and beyond the boundaries of the present into the future. To transform one's world is to transform oneself.

Building a world-class education system through capacity-building: the Singapore experience

David John Hogan and Sing Kong Lee, National Institute of Education, Nanyang Technological University, Singapore

In 1965, Singapore achieved independence as a postcolonial nation state, but it was more 'state' than 'nation'. In the 45 years since, Singapore has undertaken a distinctive and remarkably successful programme of national development, becoming not only an economic powerhouse in the Asian region, but also an influential, prosperous, orderly, cohesive, multi-racial, global city and nation state. In this endeavour, education has played a pivotal part. From the beginning, the state provided a free and highly subsidised, well-funded universal system of public education: currently, education accounts for 3.5 per cent of Singapore's GDP. In the same year, secondary schools had a retention rate of 95 per cent. Between 1970 and 2004, literacy rates jumped from 68.9 per cent to 94.2 per cent; during the same period, the percentage of university graduates in the population increased from 1.9 per cent to 12.1 per cent. These achievements are also evident in exceptional performance in international assessments in mathematics and science. In the Trends in International Mathematics and Science Study (TIMSS) assessment, for example, fourth- and eighth-grade students from Singapore consistently scored in the top place in mathematics in 1995, 1999 and 2003. In science, fourth-grade students came seventh in 1995 and first in 2003, while eighth grade students were first in 1995, second in 1999 and first in 2003.

The rapid development and remarkable success of Singapore's educational system, and of Singapore more broadly, in a mere 40-odd years is a remarkable testament to the quality of its leadership and the extraordinary commitment of the government to nation building. There has been heavy investment in the formation of human capital – the only major resource that Singapore possesses, other than its strategic geographical location — including the recruitment and training of key institutional elites, the government's commitment to securing a high degree of institutional alignment within and between sectors, and the energy, discipline, ambition and confidence of its people. Within education, for

Image: NIE, Singapore

Image: NIE, Singapore

The National Institute of Education, Singapore, is an autonomous institute of the Nanyang Technological University, Singapore

the first thirty years of the life of the republic, the government focused on developing a comprehensive system of mass education of high quality for all its people to prepare them for effective participation in the world of mass and later high-end manufacturing. Since the Asian financial crisis of the mid-1990s, the policy focus has increasingly been on preparing the Singaporean workforce for effective participation in the global economy as a leading knowledge economy and global city specializing in financial services, shipping, basic and applied research, tourism and hospitality, and high-value manufacturing in electronics, shipbuilding, computers and biochemical industries. This new orientation to human capital formation and nation building has been strongly reflected in educational policy, beginning with the 'Thinking Schools, Learning Nation' policy framework set up by the then Prime Minister, Goh Chok Tong, in 1997, and followed by a raft of specific activities to promote initiative and enterprise, high quality teaching and learning, the (relative) decentralization of school governance, the integration of technology into classroom practice, strengthening and lengthening of the pre-service teacher education programme, a major expansion of in-service professional development, and the building of a world class system of professional training for school leaders at the National Institute of Education (NIE).

From a sustainability perspective, Singapore's educational experience highlights the fact that sustainability depends on both individual and organizational capacity-building, on systemic institutional alignment and tightly coupled governance, on high quality leadership at all levels of the system, from individual schools to the most senior levels of the Ministry, and on a culture (in Singapore, a 'mindset') of continuous innovation and improvement.

Capacity-building

First, at a very broad systemic level, Singapore has been committed strongly to capacity-building at both the individual and organizational levels. At the individual level, this work centres on students, teachers and school leaders.

Individual capacity-building

Students: Ministry of Education officials and NIE researchers are committed to developing the range of skills, understandings and dispositions young Singaporeans will need for 21st-century institutional settings, above all, but not limited to, the labour market. In particular, since the release of the 'Teach Less, Learn More' policy initiative in 2004 and 'Curriculum 2015' in 2008, the government is determined to ensure that the classroom experiences of young people nurture the development of 21st century skills rather than those of a bygone era. This is reflected, particularly, in a commitment to de-emphasize a traditional pedagogy of knowledge transmission and reproduction in favour of one that focuses on developing cognitive and dispositional capacities associated with contemporary forms of knowledge work, including disciplinary and transdisciplinary knowledge production, justification and communication.

Teachers: the National Institute of Education has developed a relatively unique and high quality pre-service programme at both the undergraduate and graduate levels, integrating (and calibrating) content knowledge gained through courses in domain-specific subjects, pedagogical content knowledge gained through courses in the curriculum, teaching and assessment, and extensive classroom experience gained through a carefully gradated programme of school practicum. Selection is highly extensive and intensive as it is limited to the top 30 per cent of each annual student cohort. During their programme, students are paid a generous stipend

Image: NIE, Singapore

Image: NIE, Singapore

Classroom of the Future is an initiative set up to demonstrate and model technologies for use in the learning of tomorrow's students. It demonstrates a student-centric learning environment where technology is used to support pedagogical and instructional approaches

Image: NIE, Singapore

The collaborative classrooms provide an environment that allows student-centred and collaborative learning with the support of one-to-one computing facilities

Image: NIE, Singapore

NIE promotes the professional development of in-service teachers through continuing education as part of lifelong learning

by the government as public servants. The pre-service programme currently graduates approximately 2,300 students per year. In addition, NIE, working with the Ministry of Education, provides extensive graduate education and professional development opportunities to approximately 18,000 teachers every year in both specialist content and pedagogical fields. Teachers are allocated a very generous 100 hours of professional development time per year. Recently, the Ministry announced the establishment of a dedicated Academy of Singapore Teachers to coordinate professional development policy and programmes across the 360 schools in the system.

School leaders: Over the past decade, NIE has developed a range of specialized and locally and internationally esteemed leadership courses for outstanding teachers who have been carefully selected for positions in school government as senior teachers, master teachers, heads of department, vice-principals, principals and superintendents. All leadership programmes are developed in partnership with the Ministry and are closely aligned to government policy and priorities. Beyond this, as the Graduate Programme Office announces, "NIE consistently scans the horizon to monitor developing trends locally and globally and anticipate their impact on educational leadership development. NIE is open to new responses in the face of constant change and is willing to adopt novel strategies in the design of leadership programmes when merited. However, we recognize that change must not be at the expense of stability and suitability to the local context. The need to work with all stakeholders, conduct self evaluation, have high expectations and believe in the importance of balancing competing interests is paramount for the leadership development relevance and success." At a programmatic level, "receptivity to innovation and change requires challenging conventional thinking and moving away from a single discipline-based approach to leadership development, to a multi-disciplinary approach."

The flagship leadership programme is the Leaders in Education Programme for school principals, which has gained wide international recognition for excellence and innovation. The full-time, state-of-the-art programme is strongly future orientated and has a clear emphasis on leadership capability in a dynamic and complex context. Specifically, through a process of learning in diverse contexts, including the authentic workplace of the school and international locations, the learning platform addresses a range of issues that are seen as critical to the success of future leadership, including:

- Designing and managing learning school organizations that can sustain a competitive advantage in a fast-changing and turbulent environment
- Strategic choice and marketing
- Innovative communication and information technology
- Designing an integrative and innovative curriculum in order to achieve excellence in teaching and learning
- Building human and intellectual capital.

Organizational capacity-building

The Singapore educational system also invests strongly in organizational capacity-building. This is especially obvious in the care and attention it gives to the selection and training of school leaders, but it is also evident in a range of other indicators: the commitment of school leaders to providing a high quality education for all children in their schools, strong support for continuous pedagogical and technological innovation by both teachers and school leaders, collegial decision making within schools, a strong ethic of responsibility and accountability at all levels of schools and, above all, a commitment to continuous professional dialogue and reflection and to development of professional learning communities

Image: NIE, Singapore

The purpose-built NIE campus spreads across 16 hectares with six blocks serving a full-time enrolment of close to 7,000 student-teachers

within and across schools to ensure that innovations are rigorous, evidence-based, grounded in the authentic pedagogical problematics of classrooms and schools, and broadly supported by staff.

Systemic institutional alignment and tightly coupled governance

One of the most distinctive features of the educational system in Singapore, and a key to its strength, coherence and capacity for systemic innovation, is the tightly coupled institutional nature of the system. This is reflected in three key institutional arrangements. The first is the very close coupling at the pedagogical level of the curriculum, assessment and classroom instruction, principally secured and maintained by the national high-stakes assessment system at the end of primary school (year 6), the end of secondary school (year 10) and the end of post-secondary education (year 12). In Singapore, as in other similar systems, teachers 'teach to the test'. In Singapore, however, the 'test' is also strongly aligned as a matter of policy to the national curriculum, resulting in an unusually high degree of pedagogical alignment across the system.

Secondly, there is strong alignment between pedagogical policy, practice and research, secured by the relatively centralized nature of policy making and programme implementation in Singapore with respect to curriculum, assessment and instruction, and by the extremely generous support by the Ministry of a national education research agenda at NIE, which is both institutionally autonomous from the government and also highly responsive to national education policy priorities.

Thirdly, with respect to system policy and teacher training and professional development, there is an unusually high degree of institutional articulation (commonly known as the tripartite relationship) between the Ministry, NIE and schools, secured by specific governance arrangements between NIE and the Ministry, for example, and by funding and reporting accountabilities.

A culture of continuous innovation and improvement

Finally, in keeping with the Singaporean government's wider aims, the educational system in Singapore at all levels is strongly committed to continual innovation and improvement. Supported by a broad national agenda and policy settings (innovation and enterprise), Ministry officials, NIE staff and school leaders constantly monitor changes in the local and international educational landscape, travel extensively to visit schools and systems in other top performing countries, review and revise curriculum and assessment frameworks on a regular basis, fund a national research agenda into classroom pedagogy and how to improve it, support action research initiatives at the classroom and school levels, and encourage students to be self-confident, agentic, enterprising and, with good reason, optimistic about Singapore's future.

In general terms, it is mistaken to assume that systems can simply import successful innovations from other systems — educational systems, and the actors within them, are embedded in and shaped by a range of institutional and cultural imperatives and norms. Singapore works the way it does — and as well as it does — because of the way it has (for complex historical, cultural and political reasons) institutionalized a specific pattern of pedagogical practice, alignment and governance. Essentially, Singapore has figured out how to design, manage, sustain and continually improve a successful system of education. Consequently, we think it can demonstrate to the rest of the world what a well funded, publicly supported, well managed, ambitious system of education is able to do if it sets its mind to it.

Transforming higher education for a sustainable tomorrow: a case of learning by doing at Universiti Sains Malaysia

Dzulkifli A. Razak, Zakri A. Hamid, Zainal A. Sanusi and Kanayathu C. Koshy,
Centre for Global Sustainability Studies, Universiti Sains Malaysia

Convinced that universities everywhere must change to embrace a globalizing world, Universiti Sains Malaysia (USM) has embarked on a long-term strategy to make sustainability a major mainstream guiding principle. USM believes that its large pools of disciplinary experts, high quality research facilities, excellent infrastructure and a cohort of students with varied academic interests will help to promote sustainability in the communities it serves. We have also tacitly accepted our responsibility to be the 'social conscience of society', in addition to our traditional role of disseminating knowledge.[1]

In recognition of the university's contributions to education for sustainable development (ESD), USM was recognized in 2005 as one of seven Regional Centres of Expertise (RCE's) for the UN Decade of Education for Sustainable Development. In September 2008, Malaysia's Ministry of Higher Education granted USM the status of an accelerated programme for excellence.[2] Building on these accolades, USM has fast-tracked its efforts to refocus and retool its teaching, research and community engagements to meet its sustainability targets.

Image: USM

The APEX Award from the Minister of Higher Education, Y. B. Dato' Seri Mohamed Khaled Nordin, Malaysia

USM's sustainability agenda includes a number of initiatives. Some focus on empowering people, a precondition for sustainability as poverty, social deprivation and lack of public services negate freedom of choice and therefore people's ability to live sustainably.[3] USM's sustainability agenda thus has a special focus on the capacity-deprived 'bottom billion'. In this sense, USM is both a knowledge based institution where we create knowledge (as a 'product'), and a knowledge based institution that applies the knowledge it generates (as a 'tool') to improve the lives of ordinary people. Sustainability also requires creating functional capabilities in students to make informed and innovative choices. Examples of USM's effort to train students in this regard include annual national research and innovation competitions, and a student entrepreneurship development initiative (SEDIA@USM).

USM's sustainability integration strategy aligns with the Malaysian government's current priorities of high income, sustainability and inclusiveness.

Millennial initiatives

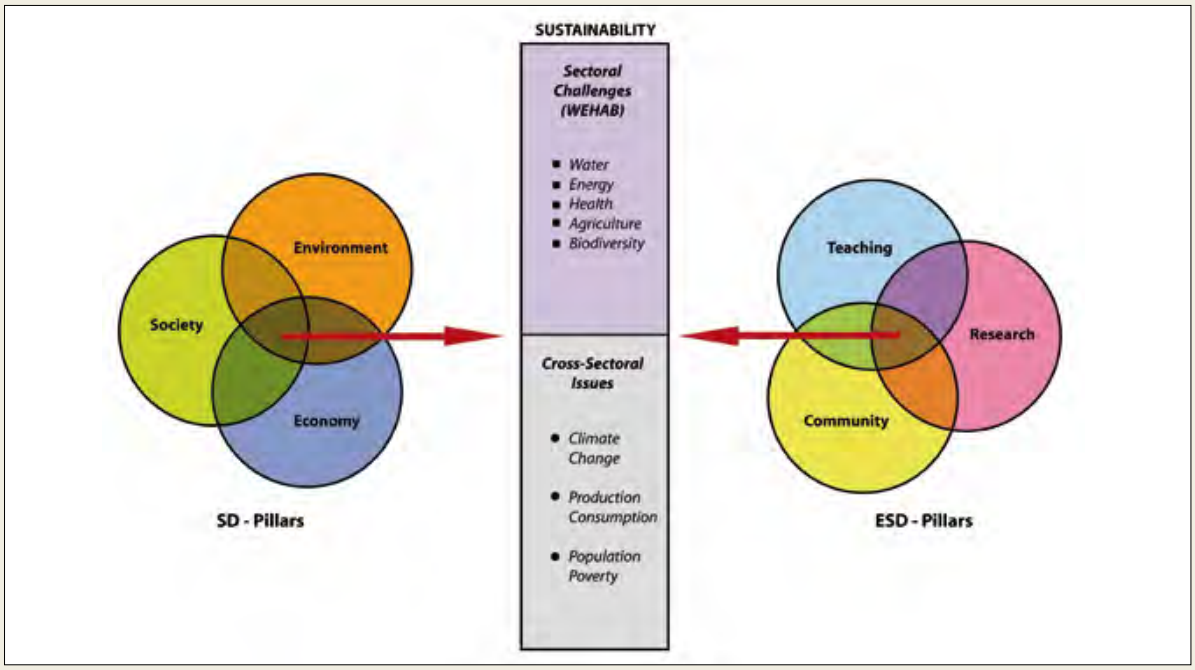
In the year 2000 USM introduced a package of activities[4] to promote sustainability: the University in a Garden, Healthy Campus, a transdisciplinary approach and USM community partnership programmes.

University in a Garden

The USM book *The University in a Garden: Special Edition*[5] says: "The environment (ălm) as a source of knowledge ('ilm) contains much we can learn by just reflecting on the garden. At the centre of this garden is rooted the age-old tree of knowledge amongst other trees all standing in a totally balanced ecosystem of flora and fauna, and the earth."

Using this development metaphor, USM has embraced a number of initiatives. For example, a 'waste management cluster' of engineering, science and technology focuses research on solid waste, wastewater and environmental remediation/rehabilitation. USM is also conserving resources. The Chancellery building now exclusively uses energy-efficient light bulbs, and efforts are being made

An integrated approach to mainstreaming sustainability at USM



Source: Centre for Global Sustainability Studies, USM

to extend this to all buildings on campus. At USM's new engineering campus, bicycle use is promoted. USM has delineated green space areas in its main campus that will be protected from building or development projects. Lastly, polystyrene containers are banned on campus, and students are supplied with biodegradable containers free of charge.

Healthy Campus

The Kampus Sejahtera (Healthy Campus) programme emerged in 2000 from the realization that students' ability to learn depends on their health and quality of life. The indigenous word *sejahtera* cuts across spiritual, social, physical, mental and environmental dimensions. The USM Clinic, (USM Sejahtera Centre) along with volunteer students, runs annual anti-obesity and anti-tobacco clinics, recycling initiatives and activities for 'differently-abled' students. USM facilities feature user-friendly ramps, shortcut passages, parking spaces and toilets for physically challenged students and staff.[6] An innovation of international significance in the area of health is the 'typhidot: rapid diagnostic test-kit' which has reduced typhoid detection time from the usual two to five days to just under one hour. This kit, developed by USM's Institute for Research in Molecular Medicine, is marketed to about 18 countries around the world.

A transdisciplinary approach

USM has adopted a cluster approach to addressing sustainability issues, striving to strike a balance between science and technology, social sciences and humanities, especially in research. Humanities such as art, literature, culture, language, history and philosophy are playing an increasingly important role in promoting sustainability. 'Art therapy' is an area of multi-disciplinary research at USM that involves the School of Arts and the School of Medical Sciences. The emotive power of humanities can cut across disciplines, sectors and borders, bringing meaning and purpose to daily life. For example, USM's Going Bananas project has brought together researchers from the School of Art and scientists from the School of Industrial Technology to train village communities in Balik Pulau, Malaysia to make handmade paper from banana trees. The paper is of print quality and is also used for making handicrafts such as lampshades, boxes and lanterns. This income-generating project is popular with unemployed young people and women in the village.

USM community partnership programmes

Examples of these programmes include the recent formation of Innovation XChange (IXC Malaysia Berhad) to facilitate the exchange of information between USM researchers and industry players; sains@usm, a nexus where science, technology, arts, academia and business intersect to produce innovative solutions to socio-economic challenges; and the Malaysian Citizen's Initiative, a school-based community sustainability programme in which high school students are trained to work with their communities to identify and address sustainability issues through participatory approaches. About 5,000 students from nearly 50 Malaysian schools have undergone this training so far. Finally, the Taiping Peace Garden Project promotes peace and harmony in Taiping, Malaysia, a city with a history of communal problems and the Mindanao Peace Programme aims to resolve the conflict in Mindanao, Philippines, by

Image: USM

A very successful medical innovation that has grassroots applications

organizing seminars, hosting workshops for enhancing capacity for professional peace building and by conducting research and education (USM's Research and Education for Peace Unit).

Sustainability infusion in curriculum, research and networking

In addition to promoting ongoing sustainability initiatives, Penang's Regional Centre of Expertise (RCE-Penang@usm) has been focusing on a variety of new projects, such as:[7]

White coffin campaign

This student-led, on-going initiative builds awareness regarding the use of polystyrene-based food containers ('white coffins'), the long-term use of which is environmentally unsustainable and may cause cancer. This programme has successfully discontinued the use of polystyrene and reduced the use of plastics on campus, and has been emulated in six other local universities.

Sustainable Penang initiative

USM works closely with other community organisations such as the Socio-Economic and Environmental Research Institute on issues such as urban development, heritage conservation and sustainable living.

'Wormi-Compost' project

Using technology enhanced by USM researchers, this successful community-based project utilizes waste from rice paddies, cow dung and other biodegradable village waste to produce quality compost which is then either sold or used as manure for organic farming, resulting in increased income generation.

ProSPER.Net projects

RCE-Penang leads two major international projects in collaboration with the 'Promotion of Sustainability in Postgraduate Education and Research Network' of UNU-IAS.

(i) Development of generic modules and training materials for sustainability: given that the focus and emphasis of sustainability may differ from place to place, the purpose of this project is to research and develop generic training modules for ProSPER.Net members. USM is collaborating with 18 other universities to develop a generic module entitled *Education for Sustainable Development: Issues and Practices for Global Application*s. The module is currently being refined through pilot tests to ensure its wider applicability.

(ii) Alternative university appraisal project: USM has initiated an alternative 'rating' system for universities, which is being tested in Malaysia and four neighbouring countries. This scheme places equal importance on quantitative key performance indicators and key intangible performance indicators. USM is also involved in a similar but larger project, 'alternate university appraisal', which is part of the ProSPER.Net programme. This assessment is based mainly on a self-awareness questionnaire, which seeks information on ESD activities in the areas of governance, education, research and consultancy, outreach and transformation.

USM as an accelerated programme for excellence

Since 2008, USM has embarked on a number of new initiatives and activities, including:

Blue Ocean Strategy

USM believes science, technology and innovation are instrumental in promoting sustainability. Such approaches have been part of advancing human civilization throughout history. Therefore, USM has adopted the Blue Ocean Strategy to "realign itself in the transformation process to move into unchartered space and untapped markets" by focusing on radical resource efficiency, renewable energy, whole system design, industrial ecology, nanotechnology, bio-innovation, poverty alleviation and peaceful coexistence.[8]

University capacity-building

In 2009, USM developed a sustainability roadmap[9] to build capacity at individual, institutional and systemic levels to produce graduates who are equipped to address the sustainability challenges facing their communities and the world at large. The roadmap focuses primarily on the UN-publicized sectors of water, energy, health, agriculture and biodiversity (WEHAB). Three very closely-related cross-sector issues are also given careful consideration: climate change and disaster risk management, population and poverty, and production and consumption issues.[10]

USM's new Masters in Development Practice (MDP), to be introduced in 2011, will feature this integrated approach to sustainability capacity-building. The roadmap also suggests developing hands-on piloting and prototyping experiences for students and staff alike to 'walk the talk' of living sustainably. These experiences could include energy and water conservation, campus ecosystem management and community outreach to villages, industry, NGOs and policymakers. For example, USM's Centre for Global Sustainability Studies recently submitted a policy brief on sustainability to the Malaysian government.

Centre for Global Sustainability Studies (CGSS)

Even with good intentions, a situation can arise where sustainability promotion is seen as in everybody's interest, but as nobody's responsibility. USM's CGSS was established in 2009 to circumvent this hurdle. The centre works with all other sections of the university and its stakeholders to promote sustainable development, paying particular

Image: USM

Biodegradable replacement for the 'white coffin' of polystyrene, supplied by USM

attention to the needs of the disempowered community while operating at the nexus between the scientific world and the policy community.

One of the first priorities of the centre was to coordinate the development of the sustainability roadmap, which was completed in 2009. Currently CGSS is involved in a series of 'roadshows' to catalyse the roadmap's effective implementation while concurrently realigning and building synergies among the abundant sustainability-related initiatives already initiated at USM, as well as those of surrounding communities, both nationally and internationally.

The centre offers multi-disciplinary training and a postgraduate programme, MDP, in collaboration with Columbia University, New York. CGSS also conducts cluster-based research, publishes extensively on the topic of sustainability, and promotes strategic network activities in areas such as sustainability in higher education, science-technology innovations for sustainability, climate change, biofuels and food security, and front-end technologies for sustainable development.

High value flagships[11]

The following four flagship initiatives are examples of USM's capabilities to deliver on sustainability promises:

(i) Archaeological windfall: a USM team from the Centre for Global Archaeological Research, has unearthed stone tools at Bukit Bunuh, Perak, Malaysia dating back 1.83 million years, older than the 1.5 million-year-old hand axes previously found in Africa. Once fully confirmed, this discovery will replace the 'out of Africa' theory of human origin by what might be called the 'out of Malaysia' theory for the oldest evidence of human presence. It will also shed light on the history of sustainable living as practised by communities in this part of the world over many millennia.

(ii) Rubber genome unveiled: USM's Centre for Chemical Biology announced on 27 October 2009 the decoding of the rubber tree genome (Hevea brasiliensis).[12] This discovery has far-reaching implications for rubber production, disease resistance, timber, pharmaceuticals and other biotechnology applications for rubber, Malaysia's second-largest cash crop. As the science progresses, this will also directly contribute to the income of small rubber holders.

(iii) USM-Karnataka Lingayat Education University (KLE) collaboration: with the emergence of new diseases and rising population and poverty levels, health care has become a crucial sustainability issue. Therefore, USM's School of Medical Sciences and KLE (Jawaharlal Nehru Medical College) have partnered to offer a joint medical curriculum that combines KLE's rigour of medical training with USM's problem-based learning approach. The inaugural class will commence with the intake of 100 medical students from Malaysia in 2010 who will help alleviate doctor shortages in Malaysia. Students from Bangladesh and the Maldives will also benefit, gaining medical training at an affordable cost.

(iv) USM e-motorcycle: USM's engines laboratory has developed an electric motorcycle that is environmentally friendly and cheap to run: 0.5 cents/km for the e-bike as opposed to 1.5 cents for gasoline models of similar capacity in Malaysia. This short-range (~100 km) vehicle can be recharged from any standard 240V AC wall outlet. USM engineers are currently working with DRB Hicom to commercialize the vehicle.

The way forward

A higher educational institution that opts to live in the past cannot be an agent of change in an ever-changing world. It is for this reason that through systematic realignment of its priorities, curriculum changes, innovative research approaches, networking, RCE activities, and dialogue between the academic community, policymakers and other stakeholders, USM is actively promoting sustainability.

We admit that there are significant barriers, both perceived and real, in terms of staff awareness, attitudes, expertise and institutional commitment to accelerating the sustainability embedding processes at USM. Unless transformation takes place in the minds of people first, implementation at the institutional level will be slower. The value of dialogue and awareness building cannot be overemphasized in this regard. As we move ahead with our responsibility to serve Malaysia's knowledge economy, we are also mindful that we must not relinquish our leadership role as the 'social conscience of society'. We need to deliberately create an organizational means to ensure that this delicate balance between academic and social obligations becomes the norm.

We need to continually re-examine our fundamentals, as we strive to address pressing global challenges such as the implementation of the Millennium Development Goals, rising population pressures, over-consumption and the impact of climate change. We have learned that today's universities can no longer afford to be oblivious to the problems faced by the people within our own shores or in the world beyond our borders.

In a world that values economic competitiveness over ethical considerations, USM seeks to balance economic, cultural and environmental integrity using the principles and practices of ESD. Exceptional skill will be needed to create USM's comparative advantage in articulating a new form of globalization that benefits from socio-cultural heritage.

Finally, we have learned that in the life of a university, as in the case of individuals, there comes a point after which there is no turning back. In our sustainability journey, USM has reached that point.[13]

Citizenship Project brings sustainable development education to Malaysia's youth

Aminah Ayob, Rajendran Nagappan and Eng-Tek Ong, Sultan Idris Education University, Malaysia

Sultan Idris Education University (SIEU) follows Malaysia's National Higher Education Strategic Plan and New Economic Model, promoting and practising education for sustainable development (ESD) to enable delivery across the curriculum to staff, students, communities and authorities. Various initiatives towards sustainable development have been taken at university and faculty levels, one of the most noteworthy being the Malaysian Citizenship Project, jointly organized with University Science Malaysia (USM). This project brought together universities, schools, teachers, students, parents, communities and authorities in an effort to create a more sustainable living environment. The main aim was to educate young Malaysian adults of 13 to 15 years old on their roles as citizens of the country and the world to ensure sustainability of cultural and environmental development.

ESD: the Malaysian perspective

Malaysia was one of the earliest countries to act progressively in greening the environment by enacting the Environment Quality Act in 1974. The concept of sustainability in Malaysia dates back to the Third Malaysian Plan (1976-1980) to promote sustainability in the habitats of humans, flora and fauna, along with the preservation of cultural heritage in the midst of population growth and industrialization. The subsequent Malaysian Plans reaffirmed the concept in different key areas.

The Fourth and Fifth Malaysian Plans, formulated in line with national economic policy, focused on eradicating poverty and addressing marginalization in order to secure unity and peace. In recognizing the scarcity of natural resources, the Sixth and Seventh Malaysian Plans continued with proactive policies to protect the sea, wetlands, endangered species and biodiversity and to reduce pollution. Vision 2020, aimed at helping Malaysia to become a fully developed country, also recognizes the importance of sustainability. Under the Eighth and Ninth Malaysian Plans, the Ministry of Natural Resources and Environment was established in 2004, uniting 14 agencies from four ministries to tackle issues related to environmental sustainability. In 2009, the Ministry of Energy, Green Technology and Water was established.

Image: UPSI

Example of a panel presentation at the Malaysian Citizen Project showcase

The New Economic Model of 2010 lifted the concept of sustainable development to a new level by including sustainability as one of the principles for transforming Malaysia into a high-income economy. Malaysia aims to be a green hub for researchers and businesses.

Environmental education is taught across the curriculum at pre-school, primary, secondary and tertiary levels. At tertiary level, specific courses pertaining to ESD are also offered as courses or as elective papers. The ESD initiatives transcend boundaries through the practise of sustainable development in extra-curricular activities outside classrooms and schools.

ESD at SIEU

SIEU recognizes the importance of ESD in creating a generation of future teachers that can lead the younger generation towards a sustainable future. Initiatives at SIEU focus on equipping the students with 21st century skills in order to achieve the objectives of ESD.

At the university level, values and skills are inculcated among the staff and the students, based on the six shared BITARA values of integrity, professionalism, teamwork, client orientation, sympathy to staff welfare, creativity and innovation. Students also learn communication skills, thinking skills, problem-solving skills, lifelong learning and information management skills, teamwork skills, leadership skills, professional ethics and entrepreneurship skills.

The university also perpetuates Malay civilization by sustaining and promoting its values and culture at local, regional and global levels. SIEU plays a vital role in researching, advocating and preserving the elements found in Malay culture. One of the most significant initiatives taken is the conservation of historical buildings in SIEU.

Approaches to teaching and learning, along with content and infrastructures, are kept up-to-date so that students are aware of the latest changes around the world. Local and foreign experts are invited to share the

Images: UPSI

Students presented their panels in a showcase organized by the committee

newest developments in different areas as a part of the staff's continuous professional development.

At the faculty level, an ESD Committee was established to spearhead initiatives to staff, students and the local communities. These initiatives include workshops, talks, campaigns, exhibitions, debates and international day celebrations, some of the activities initiated and organized by student bodies.

At Aminuddin Baki Centre for Global Education (PPGAB), various initiatives, including a Special Interest Group (SIG), are being persued to create interest in ESD amongst academicians and students. Activities conducted by the SIG and the centre include workshops and publications on ESD.

Citizenship Project

The Citizenship Project is a continuing effort towards fulfilling the aim of the National Education Philosophy to nurture "the potential of individuals in a holistic and integrated manner". The project complements the existing Civic and Citizenship Education in primary and secondary school curricula, enabling students to practise what they learn at school. The project targets lower secondary school students aged 13 to 15.

In 2009, SIEU was approached by USM to embark on the inaugural Citizenship Project in Perak, a state in West Malaysia. USM supported the event with finance, materials and teaching staff, who conducted workshops with the principals, teachers and students. SIEU contributed finance, materials, manpower and venues for the project.

The principle of *gotong-royong* (mutual effort) was at the heart of the project, involving students, teachers, parents, government officers and communities. In achieving the objectives of ESD, individuals should not only stand on their own feet, but also aspire to joint effort due to the interconnectedness of the environmental system.

The project emphasized more than just knowledge of community problems, but also skills to act upon them. Students were exposed to the diplomatic resolution of community problems through relevant policies. They were also given first-hand experience as legislators by devising appropriate policies that would eventually be proposed to the local authorities.

There were opportunities for the students to lead their communities in creating awareness and contributing towards a more sustainable living environment.

Students learned to act using the 'Four Is' approach: imparting knowledge and skills, identifying problems, initiating actions and informing the public. They were encouraged to be creative, critical and analytical in examining problems faced by their communities and gained experience of advocating their findings and initiatives to the local authorities and the public.

The project involved 520 students from 13 secondary schools, 26 school teachers, 60 student teachers at SIEU and 20 staff of PPGAB and SIEU. The students were divided into 26 groups, with 10 students in each group. Half of the teams joined the Bahasa Melayu (National Language) category; the other half joined the English category. Workshops were conducted with teachers and undergraduates to prepare them for their facilitation role with students.

During the workshop, the undergraduates were thoroughly briefed on the steps required to complete the project, while the teachers were informed that they should only facilitate, and that all input should come from the students. In groups, teachers also tackled a project using the steps and guidelines provided. This first-hand experience gave the teachers a deeper understanding of the challenges the students would face.

Imparting knowledge and skills
Students began by learning the definition and the nature of government policies. Through discussion, they identified some of the existing policies that they were aware of. Students also tried to recognize the differences between policies made by the federal government, state government and municipal councils and studied the process of devising policies. The understanding of these elements assisted the students in examining their role as citizens in the process of policy-making. This section ended with brainstorming of a few community problems and identification of the officials and agencies involved.

Identifying problems
In groups, the students discussed the problems that they had brainstormed previously, along with issues related to schools, youth, human rights and the environment. Based on the discussion and explanation, students each chose a specific problem as the topic for their project. The students formed smaller groups and investigated the problems, obtaining details such as time, place, target group and how the community was affected by the problem.

Students also learned to be resourceful to substantiate their claims and findings, as they had to identify their sources of information. Teachers gave them some options to consider, such as the library, newspapers, academicians, lawyers, judges, government officers, prominent persons in the community and the Internet. Three strategies were used, namely structured interview, printed materials and radio and television broadcasts. These activities enabled the students to learn skills required for arranging and conducting interviews and interacting with the community. In their interviews with members of the public, students gathered comments on the policies related to the problems and posed questions on the advantages and disadvantages of the policies. Finally, students analysed the information obtained from various sources. They examined the existing policies critically to find their strengths and weaknesses.

Initiating actions
The students took two actions to solve each problem. Firstly, they proposed a new policy to address the weaknesses they had identified, ensuring that it did not breach the constitution. Students also took into consideration the sensitivities of the community in terms of race and religious beliefs.

Secondly, students developed an action plan based on the proposed policy, detailing some of the activities that could be carried out by the community and government agencies to solve the problem. The plan also included some of the key persons in the community who could help them convince the community to take part in the activities.

Informing the public
Students developed a portfolio to document their problems and findings, with the supporting documents from the interviews and other printed and online materials. The portfolio for each section was judged on seven criteria, namely completion, clarity, information, supporting documents, graphics, documentation and constitutional correctness. The students presented their panels in a showcase organized by the committee, with facilitation by student teachers. After the portfolio and presentation were judged, teachers led the students to reflect on the knowledge and skills learned throughout the project.

Lessons learned
Reflection by the participating university staff, teachers and students revealed a variety of challenges and best practices from this project in the following areas:

Preparedness of the academic and non-academic staff
With assistance from USM, both teaching and non-teaching staff gained experience and knowledge on organizing and facilitating teachers and students to become better citizens. As this was the inaugural SIEU Citizenship Project, the staff also reflected on the advantages and weaknesses of each phase of implementation. In addition, during the showcase, the committee managed the unforeseen challenge of the H1N1 virus, sending out warning letters to school principals and teachers to take necessary precautionary measures.

Creating autonomy in students
Through the project, the students developed a sense of responsibility, ownership, teamwork, tolerance and respect for each other.

Teachers were advised to take extra caution when facilitating the students outside the classroom and school compound. Sensitive issues and risky places were avoided and teachers provided education on communication etiquette and ways for students to protect themselves when dealing with the public.

Benefits to SIEU students
SIEU students learned about exploration, application, implementation and advocacy of ideas and issues. By participating in this project, they gained experience both as individuals working together to solve community problems, and as facilitators guiding the students' showcases. This real-life experience complemented the initiatives taken by the university in imparting knowledge on ESD to undergraduate students.

University-community relationship
This project helped build capacity within the communities involved by creating more opportunities for them to understand their role in ESD. It also served as part of the university's corporate social responsibility to the community. As a project involving many parties, it reinforced ties between universities, teachers, students, communities and local authorities. The universities shared their expertise with the schools, and this information, together with the advice of experts, was delivered to local authorities.

Participants and their families responded positively to the activities carried out throughout the project and on the showcase. It was agreed that this project helped the school students involved to gain the necessary knowledge, skills and attitudes to become informed citizens of Malaysia and the world. Such capacity-building will ensure the sustainability of the country's social-cultural, environmental and economic development.

Promoting Earth System Science in Thailand

Pornpun Waitayangkoon, GLOBE Country Coordinator for Thailand, and GLOBE Thailand, Institute for the Promotion of Teaching Science and Technology, Ministry of Education, Thailand

The Institute for the Promotion of Teaching Science and Technology (IPST), an autonomous body within the Ministry of Education, was appointed as the coordinating and implementing agency for the Global Learning and Observations to Benefit the Environment (GLOBE) programme in Thailand on 30 September 1999. IPST has committed the GLOBE Mission to enhancing the awareness of individuals throughout the nation to benefit the environment, contributing to scientific understanding of the Earth as a system and supporting students across the curriculum with a focus on student research in Earth System Science (ESS).

GLOBE Thailand shares the common goals of the GLOBE programme:
- To increase scientific understanding of a new discipline of ESS using hands-on, minds-on and scientific inquiry approaches
- To enhance students' scientific inquiry, scientific thinking, and scientific attitude through student-teacher-scientist-community collaboration research
- To inspire the next generation of global scientists.

IPST considers the GLOBE programme to be an integral part of its mission to improve the quality of school science and mathematics education in Thailand. The GLOBE philosophy and scientific inquiry approaches foster active, meaningful, local and global environmental science education, using existing technologies. IPST provides up to ten full-time personnel comprising academic staff and seconded part-time senior specialists, with an annual budget of USD200,000. About half of the budget is allocated to supporting IPST's key university partners, based on their project proposals, to run GLOBE activities in schools in their vicinities.

During the 12 years of GLOBE's implementation in schools, it has become more institutionalized through the creation of collaborative efforts between IPST and its partners in universities and governmental, non-governmental, and private organizations.[1] The major activities undertaken include:
- GLOBE resource and training material localization and development
- Trainer and teacher professional development
- Curriculum integration
- Research and collaboration
- Partnership and network development
- GLOBE communications.

GLOBE Thailand currently has 174 GLOBE certified trainers, four master trainers, four partners, 35 active university networks, 776 active schools and 413 student researchers.

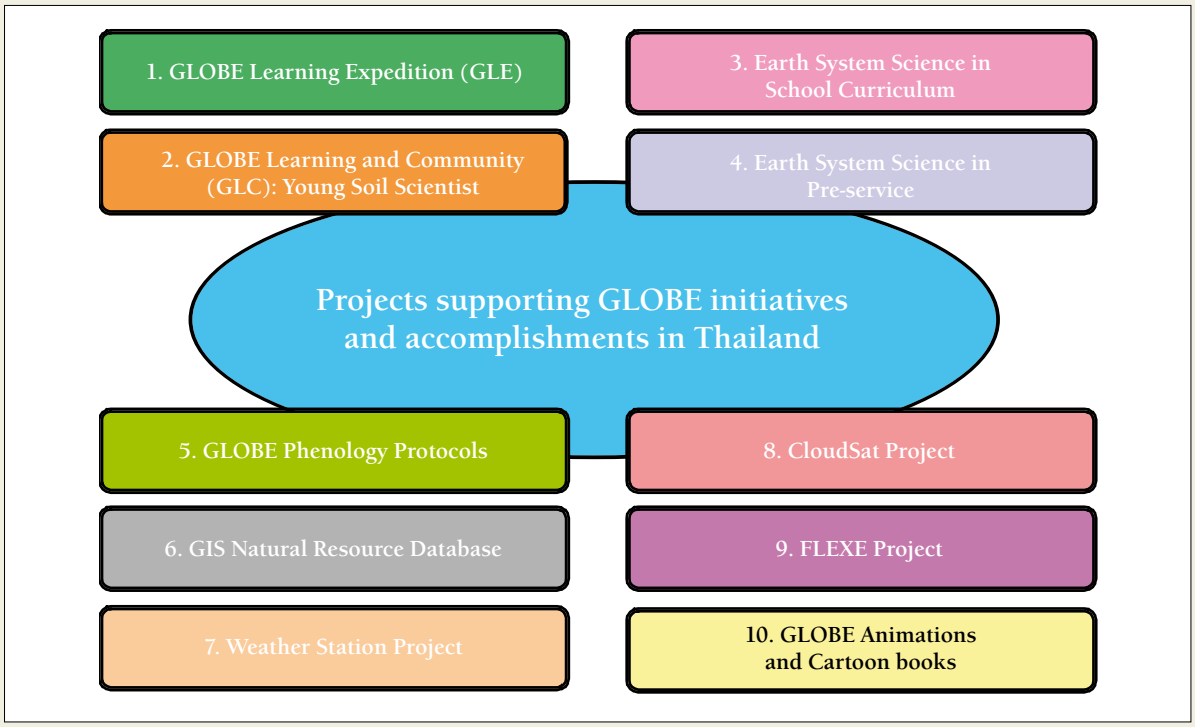
Image: GLOBE Thailand

Dr. Charlie Navanugraha, Soil Scientist, Dean of faculty of Environment and Resource Studies, Mahasarakham University, advises students in soil sampling

Image: GLOBE Thailand

Students activity in soil activities

Projects supporting GLOBE initiatives and accomplishments in Thailand



Source: GLOBE Thailand

IPST and the university partner collaboration model

The university partners take a significant part in building the capacity of both teachers and students to pursue effective GLOBE activities and conduct Earth System Science research. They have collaborated on projects funded by the GLOBE Thailand IPST to help schools in carrying out the ESS curriculum and doing ESS research, by serving as mentors and scientists for the student researchers, as well as developing ESS protocols for student research. There are 22 projects at 16 universities, funded every year since 2008, and the students' ESS collaboration research has been selected by the GLOBE Thailand IPST and its university partners for presentation in the Annual Student ESS Research Presentation Conference hosted by IPST.

Image: GLOBE Thailand

Mosquito observation activity

1. GLOBE Learning Expedition (GLE)

The GLOBE Learning Expedition (GLE) is an ideal way for schools to conduct student-teacher-scientist collaboration research focused on ESS. The students have gained an understanding of the Earth system by doing real science in a natural setting, learning the key activities needed to practice the scientific method, generating research questions from their own observations, seeking answers through experiment and inquiry, and exploring with their own natural curiosity to understand how the world works and how to protect the world sustainably.

The ESS-Student Research Camp has been held every year since 2004. After the camp, the schools have been encouraged to write ESS research proposals to get research funding from the GLOBE Thailand IPST. There are 25 research studies from 25 schools being funded this year (from a total of 105 research studies at 86 schools).

Image: GLOBE Thailand

IPST maintains contact with GLOBE scientists

Image: GLOBE Thailand

Teacher training for ESS curriculum

2. GLOBE Learning and Community (GLC)

GLOBE Learning and Community (GLC) is a project that encourages student-teacher-scientist-community research on local problems and community concerns through inquiry-based learning. The Young Soil Scientist Project was initiated as a GLC project in 2005 in collaboration with the Land Development Department, to train young students to use GLOBE standard measurements and scientific inquiry to diagnose and cure soil problems. The Young Soil Scientist Project involved students, teachers, scientists and local communities in collaborative work on the actual soil problems in each local area.

IPST and its university partners have organized Young Soil Scientist Camps every year since 2006. There are now 153 schools trained in the Young Soil Scientist Camps and funded for soil research by the GLOBE Thailand IPST.

3. Earth System Science in the school curriculum

To integrate ESS principles and approaches into the school curriculum based on the National Science Education Standard (NSES), IPST has developed the Earth System Science curriculum for grade 4-9 students, including a teachers' guide and student activities, in order to help students to learn about ESS through doing authentic science in a natural setting by using scientific inquiry. There are now 385 schools carrying out the ESS curriculum as an additional curriculum in their schools.

4. Earth System Science in pre-service

As teachers play an important role in encouraging students to conduct GLOBE activities, and pre-service teacher preparation for ESS is required for successful GLOBE implementation, IPST has promoted the integration of ESS into the pre-service programme since 2006. ESS for Pre-service Education workshops have been conducted for universities every year and the ESS Integration in Pre-service Education Guide has been developed for universities to use for their implementation since 2009. At present, 33 universities are participating in this project. Follow-up activities are arranged through visits and meetings.

5. GLOBE Phenology Protocols

To increase scientific understanding of a new discipline of ESS in the area of phenology, IPST has originated the budburst, green up, green down, and flowering phenology protocols. These protocols help students understand how seasonal change is an indicator as well as an effect of climate change and profoundly affects the balance of life in an ecosystem. Two protocols were initiated and developed by Dr. Sompong Thammathaworn from Khon Kaen University Nongkhai Campus and Mr. Pattrawut Pusingh, funded by the GLOBE Thailand IPST.

Thai mosquito protocols

A mosquito web database has been developed that Thai students and teachers can access, where they can enter and visualize real-time mosquito data online. By using these protocols, students can investigate how mosquito larvae quantities and distribution are related to local atmospheric conditions.

Thai coral protocols

These protocols include assessments to estimate the percentage of coral growth, and of living and dead coral and algae, and the prevalence of coral bleaching and disease. In addition, researchers have been collecting atmospheric and hydrological data regarding sea surface temperature and light intensity. Research has taken place on Ngai, Ma and Raja Islands in the Andaman Sea. Thai mosquito and coral protocols were initiated and developed by Dr. Mullica and Dr. Krisanadej

Image: GLOBE Thailand

GLE research camp

Jaroensutasinee and their team from Walallak University, funded by the GLOBE Thailand IPST.

6. GIS Natural Resource Database

IPST has developed a GIS Natural Resource Database for Rachaburi, Phetchburi and Prachubkirikhan provinces, to serve as a natural resource archive that the students can use in their study and research. Students will be able to access and retrieve the data from this database via the Internet anytime and anywhere. There are currently 22 schools participating in this project.

7. Weather Station Project

IPST, in collaboration with Walailak University, set up an automatic weather station project to develop the weather database for students to use in their research. There are six weather stations installed in four regions of Thailand to collect weather data including air temperature, relative humidity, dew point, wind chill, wind direction, wind speed, heat index, UV index and solar radiation. Data collection takes place using a data logger for automatic retention in the weather station server. A weather station website has been created to allow students to retrieve weather data collected from four regions to use in their research projects.

8. CloudSat Project

In collaboration with Walailak University, IPTS has coordinated the CloudSat Project in Thailand. There have been several activities in the past year, such as a student conference, teacher training, school visits and funding of school research projects. This project aims at prompting students to investigate how weather parameters, the percentage of cloud cover and CloudSat images are related to local organisms and environments. Students will be trained on CEN protocols to observe the percentage of cloud cover and cloud types, taking pictures during the CloudSat overpass of their schools and comparing data with the CloudSat Images. This project will allow the next generation of scientists to share methods, compare data and monitor their local environments. There have been 35 CloudSat research studies funded by the GLOBE Thailand IPST.[2]

9. FLEXE Project

The 'From Local to Extreme Environments' (FLEXE) Project involves study of the deep ocean, led by Pennsylvania State University in partnership with Ridge 2000 and InterRIDGE scientists. Through comparative protocols and online interaction with project scientists and partner schools, students gain an understanding of local and deep-sea environments, the interconnected Earth system, and the process of science. FLEXE students collect data from their local environment and compare it with data from an extreme deep-sea environment. Scientists guide students in their analysis of deep-sea data through the online FLEXE Forum. Scientific reporting, peer review, and communication with scientists at sea during a research cruise cap the students' experience. IPST, in collaboration with Walailak University, has coordinated the FLEXE Project in Thailand since 2009. At present, there are 17 schools participating in this project and doing FLEXE research funded by the GLOBE Thailand IPST.

10. GLOBE animations and cartoon books

To motivate young children to learn and understand ESS easily, IPST has developed seven GLOBE animations and cartoon books, both Thai and English versions.[3] Banpu Public Company gave support to IPST in the production of the Globe animation materials and distributed them free to 34,000 primary schools all over the country.

GLOBE Asia-Pacific regionalization

Following the first GLOBE Asia-Pacific Regional Consortium held at Iloilo, Philippines, GLOBE Thailand was nominated as a Chair of the Developing Regional and International GLOBE Projects and Collaborations Working Group. The group agreed to focus on the following research areas:

- Drought
- Atmospheric change
- Landslide and soil erosion
- Biomes ecology
- Biodiversity change
- Flooding
- Water quality
- Watershed management
- Marine biology.

Regional activities in 2010

From 1-3 April 2010, two representatives from Thailand attended the second GLOBE Asia-Pacific Regional Meeting in Dhaka, Bangladesh, to plan future student inquiry activities for the region. From 6-8 September 2010, three schools from Thailand joined the Seminar on 'Biodiversity, Wetland, and Climate Change' in Goa, India, in the Thai-Indian Student Exchange Program. These activities will continue to develop the work of IPST to promote understanding of ESS among students in many environments.

Vietnamese perspectives on ESD

Le Dong Phuong, Viet Nam Institute of Education Sciences

Viet Nam, in Southeast Asia, has a land area of approximately 331,688 km^2. The topography consists of hills and densely forested mountains, with low land covering no more than 20 per cent. Mountains account for 40 per cent of the area, with smaller hills accounting for 40 per cent and tropical forests 42 per cent. Viet Nam has diverse geographic features including large deltas (Red River Delta in the north and Mekong Delta in the south), high mountain chains and vast basalt plateaus. The 3000km coastline contributes to the livelihood of much of the population of 86 million.[1]

Because of differences in latitude and the variety of topographical relief, the climate varies considerably from place to place, which creates a high level of biodiversity in Viet Nam. Viet Nam is ranked 16th in biological diversity (having 16 per cent of the world's species[2]).The Vietnamese government is very well aware of this and has done much to preserve the precious nature and environment for future generations.

In the wake of economic reform, Viet Nam has realised a number of significant achievements in terms of development. Economic growth has been maintained at a high rate. Poverty alleviation efforts have resulted in a range of successes that have been highly recognized by the United Nations and international partners. Living standards have been improving continuously. Vietnamese people now have greater access to a number of high-quality services. The Vietnamese government pays close attention to socio-economic development and poverty reduction, as well as environmental protection through sustainable natural resource use and sound environmental management for sustainable development.[3]

Aside from these successes, Viet Nam is facing a number of severe and urgent environmental problems. We are aware of the short-term and long-term challenges, and are preparing for these in terms of comprehensive consciousness, policy mechanisms, workforce and resources to create a breakthrough in environmental protection activities in the coming years. The Vietnamese government has drawn up a range of policies to express its view of the importance of environmental protection as an indispensable condition for sustainable development. The Prime Minister has approved Agenda 21 and the National Strategy for Environmental Protection to 2010 and Vision toward 2020, which provide detailed and clear objectives, content and solutions for environmental protection. The National Assembly approved the amended Law on Environmental Protection in 2005.

Education in environmental protection and sustainable development policies

In the National Strategy for Environmental Protection, measures for sustainable development have been clearly defined.[4] These include:

- Education to improve awareness of responsibility
- Balance in economic growth and social progress and equity, as well as environmental protection
- Increased research and development capacity in environmental protection technologies.

In the Strategic Orientation for Sustainable Development in Viet Nam (Viet Nam Agenda 21),[5] sustainable development has been identified as a cause for concern for the whole of society and the principles for this are:

- Human beings are the centre of economic development
- The environment is inseparable from the development process
- A balance between current and future generations must be maintained
- Science and technology provide the foundation and momentum for development.

In order to realize success in sustainable development, Viet Nam Agenda 21 has also identified the importance of education. The measures related to education can be grouped as follows:

- Environmental and sustainable development education in schools
- Workforce training in the fields of environmental protection and sustainable development in higher education institutions
- An awareness campaign for sustainable development as a means to improve people's knowledge and citizens' consciousness
- Information for local populations on rational use and protection of resources
- Encouraging the local population to participate in the protection of environment and local resources.

These broad policies have had an impact on the education system in Viet Nam. Environmental protection education began in the early 80s and gradually expanded to cover education for sustainable development (ESD). In 2008 the new school curriculum was finalized and this included elements concerning sustainable development. Teachers and students are now encouraged to discover issues related to local environment and development and bring them into the classroom.

On 5 May 2006, at the end of the second National Conference on Sustainable Development, the Prime Minister decided to form the National Sustainable Development Council chaired by the Deputy Prime

Minister. This is a step towards enhancing specialized capabilities for sustainable development. The National Sustainable Development Council was reorganized in 2009 to cover ESD as a permanent part of its activities.[6] The former Viet Nam National Committee for the UN Decade of Education for Sustainable Development (DESD) was designated as one of the four special committees assisting the National Sustainable Development Council. The members of the Viet Nam National Committee for the DESD include the Ministry of Foreign Affairs, the Ministry of Education and Training, the Ministry of Culture, Sports and Tourism, the Ministry of Information and Communication, the Ministry of Resources and Environment, the Viet Nam Academy of Social Sciences, the Viet Nam Academy of Sciences and Technologies and the Viet Nam National UNESCO Commission.

ESD in Viet Nam

The first National Action Plan for ESD

In line with the United Nations initiative on the DESD, a Viet Nam National Committee for the DESD has been established.[7] Under the umbrella of this national committee, the National Action Plan for the DESD (2005-2014) has been prepared. It focuses on orientation and vision development; contribution and mastering; coordination and cooperation; capacity-building and training; research and innovation; ICT; and monitoring and evaluation.

In the first five years, the main activities were the raising of awareness, piloting of initiatives and projects for new linkages. The capacity of the participating agencies and organizations has been improved and ESD has been introduced into many non-formal educational activities throughout the country and has now become part of the Education For All campaign in Viet Nam.

School education programmes have been enriched with elements of ESD. National policies and actions have been introduced into school curriculum such as gender equity, children's rights, HIV/AIDS, environmental protection and livelihood development. At national level, the research cooperation and capacity-building network has been expanded, providing the required knowledge and qualified manpower to agencies and organizations working on ESD, as well as environmental protection. At a local level, diverse educational activities in and out of school have brought in the necessary knowledge and skills to solve socio-economic local issues. ESD has actively helped to solve developmental issues and contributed to the goals of education.

Under the framework of the first National Action Plan, many activities have been carried out, such as cooperation between Viet Nam Man and Biosphere and the Viet Nam Agenda 21 Office in devising sustainable development models for the development of biosphere reserves in Viet Nam and funding agreements with the private sector for sustainable development and ESD activities.

In collaboration with UNESCO, a forum for partners in ESD has been established as a vehicle to share information among ESD partners. The UNESCO guide on teaching and learning about sustainable development is being translated and adapted to Vietnamese conditions as a supporting material for teacher training. Many of the teacher trainers have been sent to workshops to enhance their knowledge and skills in ESD. High-level educational managers are also placed in orientation workshops to learn about ESD, from which awareness about integration of ESD into educational programmes will be eased and facilitated for these managers.

The Viet Nam National Committee for the DESD has also supported many workshops and training activities to enhance knowledge surrounding ESD and share experiences from other countries to Vietnamese educational institutions. A youth forum, Youth and Sustainable Development 2010, has been organized by a local non-profit organization to promote the pioneering role of younger generations in sustainable development.

However, the first five years of ESD have also faced many challenges from the education system. Despite the progress in education, the system is still burdened with problems such as dated teaching methods and heavy content. Integration of ESD and environmental education content into school curriculum has proved to be difficult due to the overloaded curricula. ESD content brings in new knowledge but awareness and behavioural changes have been slow to come. The lack of a clear roadmap for integration creates difficulties when integrating ESD into education programmes.

The second National Action Plan for ESD

Based on the experience in the first five years of ESD in Viet Nam, the Bonn Declaration on ESD and Viet Nam Agenda 21, a new National Action Plan for ESD in Viet Nam (2010-2014) has been formulated. The overall task is to accelerate ESD initiatives and programmes, mobilizing resources to initiate the transformation in lifestyles. The main components of the new action plan are teaching and learning for a sustainable future through coordination and cooperation; capacity-building and training; research and innovation; and ICT and monitoring.

The new action plan aims to: improve the recognition of ESD as a basis for sustainable development; transform sustainable awareness into concrete actions; integrate sustainability into certain aspects of education for a sustainable, equitable and civilized society; enhance the coordination and cooperation between partners for ESD, and link ESD and Education For All, the Millennium Development Goals, Learning Society and Vocational Education For All.

The new actions to be taken in the coming years include:

- Integration of ESD into formal and non-formal education programmes
- Capacity-building and training activities
- Propaganda for raising awareness about ESD for all individuals, organizations and agencies
- Improving non-formal education
- Mobilizing the participation of social organizations and businesses
- Improving local and international coordination and cooperation.

One of the focuses of ESD in the years to come will be climate change and its impact on Viet Nam, as it has been recognized that Viet Nam will be one of the countries that will be hardest hit by potential

Image: courtesy of Ho Chi Minh City Department of Education and Training

A poster promoting recycling, made by schoolchildren in Ho Chi Minh City

climate changes. As a result, a national response programme for climate change has been prepared and put into action by various government agencies and organizations. Ministries including the Ministry of Education and Training are drafting their action plans. In this national programme, the education sector is responsible for improving the population's awareness and for the training of a specialized workforce to meet the challenges of climate change.

Challenges to overcome

ESD has been part of education in Viet Nam for a long time. The importance of ESD has been recognized and realized in many ways in the system. However, given the lack of a consistent roadmap for implementing ESD and the lack of resources to bring ESD up to date and train the necessary qualified human resources, the results of ESD activities in Viet Nam over the last years have not gone as expected.

As a country with rich biodiversity and natural resources, but also constrained by its development needs and the large population living under the poverty line, Viet Nam has to overcome many issues before it is able to realize sustainable development and DESD goals. In this context, education plays a very important role and the government and other non-government organizations have to work together to reach the objectives of ESD. Cooperation, local and international, is also needed to enhance the ESD activities and to improve the effectiveness of ESD.

Caring for people through education

Patricia Gallardo, Director of Corporate Social Responsibility and Sustainability, Shangri-La International Hotel Management Ltd.

Shangri-La Hotels and Resorts envisions a community of responsible and educated citizens who are environmentally conscious, practise social responsibility in their daily lives and inspire others to do the same.

In 2005 the company launched its first corporate social responsibility (CSR) initiatives, which were streamlined and refined in 2009 with the hiring of a dedicated corporate level CSR specialist. Three key programme areas were also formalized in 2009: Sustainability, Embrace and Sanctuary.

Sustainability, Shangri-La's Social Responsibility programme, systematically addresses issues that concern the environment, supply chain, employees' health and safety and stakeholder relations. In this way, CSR becomes a good way of doing business, as well as a tool towards genuine development.

Beyond investing in its own people, Shangri-La believes that social development is best instigated with young people from the local area. Because the group operates in areas with disparate social and economic inequalities, Shangri-La needs to work with local education and health organizations if it wants to effect real impact and meaningful change over a longer time period.

Image: Shangri-La's Rasa Sentosa Resort, Singapore

Rasa Sentosa Resort Chef coaches a teenaged boy in the basics of cooking

Embrace, Shangri-La's Care for People Project, was launched in September 2009, requesting that each hotel makes a 10-15 year commitment to a chosen organization — be it a school, health centre or orphanage — that benefits the local community. This is chosen based on criteria including beneficiary status/need, a match with hotel resources and skills, and accessibility to a hotel to encourage consistent employee volunteering. A template on education and health project development is made available, and hotel management and staff work with the named beneficiary to define yearly goals and targets. At the end of the commitment period, it is envisioned that the children have finished higher education, are able to look after their own health and are ready for employment based on their own merits. Hotels are encouraged to look at running hotel skills training programmes to entice these graduates to work in the industry and secure a sustainable career for themselves. The Embrace programme therefore represents an interesting contribution from the private sector to ESD.

As of July 2010, 91 per cent of the hotels have started to work on various education projects such as school refurbishments, scholarships, hotel training and apprenticeships and support for children with special needs. Health projects include raising funds for surgery and rehabilitation of children with various ailments. In the last decade, Shangri-La Hotel Kuala Lumpur and Traders Hotel Kuala Lumpur have raised over two million Malaysian Ringgit (USD585,820), helping a total of 118 children undergo urgent heart surgery. With their rare cases of cardiopathy and other heart conditions, these children had to undergo immediate operations in order to survive. Both hotels have been working on supporting the recovery and return to normal living arrangements of these children, resulting in over 60 per cent of them now attending school.

Dignity and sense of purpose

Beyond books and classrooms, education is a powerful tool in restoring a sense of worth, especially to individuals who may not have the capacity for self-awareness. Since 2008, Shangri-La's Tanjung Aru Resort and Spa in Kota Kinabalu has partnered with Seri Mengasih, a school for more than 100 intellectually and physically challenged children. 2010 marks the third year of full school fees support, increasing student performance and eventually enticing more students who can be apprentices at the hotel.

This initiative has given rise to the inspiring story of Andrew Yong, who currently works at the registration and towel counter by the poolside and is able to interact with guests. The hotel is currently raising funds to help purchase a Snoezelen centre, a learning device that is designed to engage and stimulate students' senses and provide a method for nurturing sensory integration.

In Shangri-La's Rasa Sentosa Resort in Singapore, 18 students from Delta Senior School, another special needs institution, have been on a hotel work placement in the kitchen, housekeeping, grounds and gardens and other areas. Just as any new intern or employee would, these students participate in hotel orientation classes and prepare for the busy days ahead in a bustling resort. Two students have already graduated and are now full-time employees at the hotel. The heartfelt rationale of this project is its capacity to restore a sense of purpose, normalcy and dignity to these young people's lives.

Capacity-building for sustainability

Providing an environment conducive to learning with modern study materials is a constant challenge, especially in remote areas. Two Chinese hotels used Shangri-La's Embrace project as platforms to address access to modern facilities to ensure high levels of literacy and quality of children's health.

In the Yitong county of Jilin, China, 20 per cent of middle school students drop out each year due to a lack of financial resources. Shangri-La Hotel Changchun pledged to reduce this to ten per cent in 2015 through the provision of a strong basic education facility. It raised funds in 2008, was built in 2009 and by 2010, opened up the school to over 140 students. Knowing that it cannot succeed alone, the hotel involved partners from the East Asia Economic and Trade Newspaper and German International School to supplement its commitments. Through this private cooperation, over 2,000 books and 50 desks and chairs have been made available to over 140 children, and two teachers were enrolled in the Changchun Teachers' Further Education Institute in July 2010. Furthermore, this project enticed groups like Hutchison Whampoa Properties and various individuals from the German and Japanese communities to develop their own CSR projects with the school. With much success in the first year, the hotel will continue to upgrade the school's facilities such as Internet and multimedia learning points, sustained student after-school activities and teacher training and development. By 2020, Xin Jia Primary School should be able to graduate from the Embrace project and pay its own fees going forward, as well as help other schools.

Shangri-La Hotel Wuhan believes that sufficiently nourished and cared for children are in the best position to learn and excel. In 2009, the hotel used its skills in project construction, cooking and food safety to build a Love Kitchen for the children of the Wuhan Caring Rehabilitation Center. The Love Kitchen aims to provide simple but healthy meals for the children, carefully crafted by the hotel's able chefs. It also doubles as a learning hub for the centre's workers, who shadow the hotel chefs and learn simple culinary skills. Around 15 per cent of the hotel staff are regular volunteers who come to fix water sources, electrical appliances, classroom and drainage improvements. Over the next ten years, the hotel aims to prepare 10-15 per cent of the children for normal schooling, increasing their capacity for independence.

The subject of environmental sustainability

In the resorts, a concerted effort is made regarding habitat restoration and species conservation. Shangri-La emphasizes the commitment to environmental protection, which, in many island communities, is at odds with the sources of livelihood. Two resorts have linked their Embrace projects

Image: P. Gallardo

Seri Mengasih Center's children enjoy eating independently

Image: Shangri-La Wuhan

A child finishes up the Love Kitchen mural by placing her handprint

to highlight sustainable environmental practice and engage the local citizens in capacity-building activities addressing sustainability.

What used to be a rock garden is now home to the lush Shangri-La Mactan Resort and Spa in Cebu, Philippines. As the island's strongest environmental steward, it ensures that neighbouring communities (*baranggays*) train their children to be stewards of the environment. Baranggay Tingo is a community of almost 1,000 families situated across the resort itself, often playing host to guests who enjoy water sports or island hopping. In addition to working in dilapidated classrooms, the 537 children have no steady source of water and no access to decent toilets. It is a challenge to teach them about composting and waste segregation, if they do not have access to these basic facilities. The hotel began engagement with the community in 2009, mapping out yearly improvement targets, ranging from the installation of toilets to health centre improvements, alongside health record maintenance, medical missions and support for women during pregnancy. Ultimately, the hotel envisions engaging the graduates in hotel skills training and they will also have the chance to be employed as co-stewards of the hotel's marine sanctuary and other environmental projects.

Shangri-La's Fijian Resort and Spa was designated a 'model site for coral reef restoration' by the United Nations Environment Programme in 2002, and remains a catalyst for environmental protection and capacity-building activities addressing sustainability. In its Embrace project, it aims to teach local children about marine conservation awareness while promoting a renewed sense of youth empowerment. Building a marine sanctuary means changing the way locals source food – with income generated not from fishing but from protecting the environment. In order to ensure that the next generation continues to see the sea as a habitat and not as a kitchen, the resort invests in long-term programmes to provide outreach to schools and youth groups in marine conservation and natural resource management. It has also set up the Yanuca Island Marine Centre with an environment programme to create awareness for guests, staff and the local community on the importance of coral reef conservation. Almost 200 people visit the centre per month, making the resort an extension of the classrooms and a learning hub for guests.

Image: Shangri-La's Fijian Resort & Spa

Cuvu District children participate in mangrove tree planting

Replicability, impact and sustainability

Especially in developing countries, creating sustainable, developed societies depends on models that work and prove to be highly replicable. Embrace aims to generate best practices in public-private partnership and synergies in the places in which Shangri-La operates, by:

- Building commitment from hotels, beyond the term of a general manager or the executive committee
- Developing ownership among the employees and a genuine relationship with the locals
- Promoting system-wide solutions instead of one-off, stopgap measures.

The cases cited above, along with other examples, have led to templates that other hotels, especially new projects, can customize and take inspiration from, based on local needs. There are currently six hotels in Beijing owned and managed by the Shangri-La group that have come together to support the rehabilitation and development of two schools. This model leverages both the human and financial resources of hotels within the same location. In Penang, there are three properties that work together in sustaining the Lighthouse Community, a small village with various requirements for health and elderly support, consistent adult income and education for the children. The hotels have divided the tasks of fundraising through hotel events, educational support through library establishment and sports activities, and health programmes through the creation of health records, to best address the village's issues. Whether big or small, these projects all aim to have an impact on the way local communities are supported, gradually teaching them how to stand on their own. The 10 to 15-year timeframes makes it very clear that there is a point of graduation when they become real models for the communities they live in and can inspire change.

Moving forward

The first year of project implementation has proven to be a challenge to the hotels, most of which are managing long-term projects with local partners for the first time. Despite this, progress has been altogether consistent and on an upward curve for the majority. The remaining hotels face particular issues regarding beneficiaries' capacity to create or accommodate distinct hotel activities, hotel funds and staff volunteer availability, especially during peak seasons of hotel occupancy. Nevertheless, as the hotel owners continue to strongly push for the success of Embrace, and with the hotel management's support and staff commitment, Shangri-La hopes to contribute to a world with more educated and responsible citizens who will one day be able to care not only for themselves and their families, but others as well.

Politics and civil society in the UN Decade of Education for Sustainable Development

Walter Hirche, President of the German Commission for UNESCO

Implementing education for sustainable development (ESD) in all areas of education and learning is a massive reform agenda that requires the participation of all stakeholders in politics and civil society. UNESCO National Commissions can serve as effective facilitators for such a process. The German implementation of the UN Decade of Education for Sustainable Development (DESD) can serve as an example in this regard.

Education for sustainable development as a multi-stakeholder project

ESD means acquiring the values, competencies, skills and knowledge necessary to shape the future in a humane and responsible way. A major education reform project would be required to achieve this, as well as a learning process for all society. Such a project will only become effective when all stakeholders take on responsibility for its implementation. The involvement of all major groups for the achievement of sustainable development is a central principle that was agreed upon at the Earth Summit in Rio de Janeiro in 1992 and laid down in Agenda 21. In particular, sustainable development requires a combination of top-down and bottom-up approaches. Clear and binding political frameworks are required. At the same time, resource efficiency, fair global development and social justice will only be achieved when every member of society becomes involved and starts moving toward sustainable development on their own account. What is more, clear and binding political frameworks will only come into being when citizens demand them. What is true for sustainable development is equally true for ESD and the implementation of the DESD.

The role of civil society and partnerships

The UN General Assembly declared the DESD in 2002 and, the UN member states have committed themselves to actively implementing the DESD in the years 2005 to 2014. Indeed, the responsibility of governments is a key

Image: Stckxchng_spekulator.jpg

A major education reform project will only become effective when all stakeholders take on responsibility for its implementation

Image: www.bne-portal.de

The German DESD website

factor when steering education towards sustainable development. Education plans and curricula are normally in the domain of governments or public administrations. Governments provide budgets for education reforms, and they also issue political guidelines. Strong political support is thus an important facilitator for DESD implementation.

At the same time, government action alone is not sufficient for successful DESD activities. Civil society plays an equally important role. This is true for all far-ranging reform agendas; however, the participation of civil society is particularly important for sustainable development and for ESD. What, then, is the role of civil society in the DESD, nationally and internationally? First of all, ESD on the ground is often implemented by civil society, by environmental or development non-governmental organizations (NGO's), by foundations or simply by individual experts. They are the ones who can disseminate ESD to every member of society, spread information and change habits. Secondly, many innovative ideas that drive ESD forward emerge from the awareness prevalent among many sectors of civil society that our resource-intensive way of life must change. Innovative ideas depend on open discourse. Civil society is where this discourse takes place.

Moreover, a vibrant discourse on ESD in civil society can provide a corrective to politics and administrations. For various reasons, politics can be slow to grasp the dramatic urgency to take measures that promote sustainable development — measures that might be hurtful in the short run and endanger re-election. ESD, in particular, is sometimes marginalized because education is under so many other pressures and confronted with many other demands. In this situation, NGO's often have the means, through public campaigns, to demand more urgent action from the political sectors that are responsible. Civil society can play a similar 'watchdog' function with regard to private business.

For comprehensive changes in education, however, civil society action must ultimately reach the level of education plans and budgets. ESD needs to be enshrined in coherent and balanced political frameworks in order to be realized across the board and to stay in line with other demands education must fulfil. The most promising way of implementing the DESD, therefore, is to forge a partnership between politics and civil society, a partnership that need not always be harmonious but should be designed in a way that makes antagonisms fruitful.

The role of National Commissions for UNESCO

National Commissions for UNESCO, which have been established in all UNESCO member states, are in many countries ideally positioned to forge such a partnership between politics and civil society. While in each member state National Commissions are structured in different ways, one of their main tasks is to organize national civil society input into multilateral cooperation in the fields of education, science, culture and communication. One of the major strengths of the National Commissions is that UNESCO is a highly respected 'brand'. National Commissions therefore enjoy high acceptance in civil society and can thus serve as a platform for organizing dialogue between the major players in civil society, political administrators and decision makers. Moreover, they also have a certain neutrality, being situated halfway, as it were, between politics and civil society. An additional strength is that they are part of a global network of 193 National Commissions, which makes it possible to quickly communicate national activities and link them with activities in other member states. For the German implementation of the DESD, we have attempted to build upon these strengths.

The implementation of the DESD in Germany

Germany is in the fortunate situation that the implementation of the DESD has enjoyed considerable political support. In 2004, the German Parliament in a unanimous resolution called upon the government to become active in the DESD and provided suggestions for a plan of action. The lead ministry for the DESD, the Federal Ministry of Education and Research, then provided funding to the German Commission for UNESCO to set up a DESD coordination unit. The patronage of the German Federal President for national DESD implementation is another strong political signal.

From the beginning, organizing DESD implementation in a partnership between politics and civil society has been a cornerstone of our national activities. In fact, in 2003, as a follow up to the World Summit on Sustainable Development in Johannesburg, the German Commission for UNESCO issued its Hamburg Declaration on ESD and called upon all relevant stakeholders to make the DESD their own. As a consequence, an organizational structure was put in place with the National Committee for the DESD at the centre.

The National Committee and the Round Table

The German National Commission for UNESCO set up the National Committee for the DESD in consultation with the Federal Ministry of Education and Research in mid 2004. It brings together representatives from the relevant Federal Ministries, Parliament, the Länder or States, local government, NGO's foundations, the media, the private sector and academia, as well as from school students. Multi-stakeholder cooperation is realized through the

National Committee in three ways. Firstly, the members jointly consult on achievements, emerging ideas and the way forward for the DESD; for example, the National Committee, together with other stakeholders, drew up and decided on the National Plan of Action. Secondly, the committee is a forum where members can voice their related interests. Thirdly, the committee is the voice of the DESD for the larger political arena and society as a whole.

The National Committee is also responsible for the certification of good practice projects in Germany. Innovative ESD projects are recognized as 'Official German DESD Projects' and may carry this designation for two years. At the mid-point of the DESD, some 1,000 projects had been recognized (for this initiative, see the article by Gerhard de Haan in this publication).

In order to broaden the basis for its consultations and to spread ESD further among education and sustainable development stakeholders, the National Committee also called for participation in a round table. The German DESD Round Table comprises some 130 members — mostly institutions but also individual experts — and comes together once a year on the invitation of a federal state government. Throughout the year, various working groups contribute to generating ideas and carrying out projects for the DESD. Some recent activities include a declaration on 'Universities for Sustainable Development' that was initiated by the higher education working group and adopted by the German University Rectors' Conference and the German Commission for UNESCO. The working group also organized a conference to discuss the declaration's implementation. The early childhood education working group prepared a position paper, which was distributed to stakeholders, on *Delivering Future Capacity in the Kindergarten: Giving Children a Stronger Role, Advancing Sustainable Development*. The working group on biodiversity and ESD prepared an extensive manual on how to include the various facets of biodiversity into education.

The National Committee and the Round Table are supported by a German DESD coordination unit, or secretariat, for which the German Commission for UNESCO is responsible and that is funded by the Federal Ministry of Education and Research.

Objectives and responsibilities

The central bodies' objectives and responsibilities put in place for the implementation of the DESD in Germany can be summarized as follows. All of the responsibilities draw on the potential and strengths of the work of UNESCO National Commissions to work closely with politics and civil society:

- *Agenda setting*: ESD and its relevance are communicated to decision makers, opinion leaders and disseminators. Politics and civil society are familiarized with the potential of ESD to make education future oriented. The overall objective is to move ESD higher up the political agenda.
- *Providing a platform, networking*: the organizational structure makes it possible for the various ESD stakeholders and practitioners to speak with one voice, debate and agree upon common positions, and develop joint activities.
- *Promoting conceptual development*: ESD in general or aspects of ESD — for example, with regard to annual focal themes agreed upon — is being further developed with regard to conceptual questions and practice. In particular highlighting good practice through the certification of DESD projects provides incentives for innovative development.
- *Ensuring visibility, provision of information*: DESD activities are communicated to the specialist groups and the general public. The DESD coordination unit serves as an information resource and clearinghouse for all aspects related to ESD.

Image: www.bne-aktionstage.de

Annual ESD action days in Germany

Instruments for pursuing these objectives include: workshops, seminars and conferences; publications; bilateral meetings with stakeholders; political recommendations; a major ESD website (www.bne-portal.de); presence at fairs; annual action days with around 400 individual contributions; and projects in partnership with the private sector.

The way ahead

DESD implementation, thanks to the political and financial support available and to the enthusiasm and commitment of stakeholders, has been rather dynamic since the beginning of the DESD. There has been particluar success with bringing together interested stakeholders, highlighting good practice and, to a certain extent, setting the political agenda. The first half of the DESD for Germany culminated in our co-organization of the major UNESCO World Conference on ESD in spring 2009 in Bonn.

Nevertheless, major challenges remain. ESD is still far from being an integral part of teaching and learning across the whole education system, and important stakeholders are not part of the process yet. In the coming years we therefore want to focus on drawing out much more clearly the important contribution that ESD makes to raising the overall quality of education. This also means approaching and convincing stakeholders in the world of education and beyond that are not yet familiar with ESD or, due to the many other pressures education is under, do not yet see the urgency to put ESD into practice across the board. We hope to make progress on these issues, building on the partnership between politics and civil society that we have constructed in the past few years.

UNEP's environmental education activities

Ibrahim Thiaw, Director of the Division of Environmental Policy Implementation, United Nations Environment Programme

UNEP's environmental education and training (EET) activities aim to promote attitudes and value systems that influence environmentally ethical behaviour by developing understanding, skills and values that will enable people to participate as active and informed citizens in the development of an ecologically sustainable and socially just society. Environmental education is fundamental to the achievement of the goal of sustainable development. Education, awareness raising and training are essential to United Nations Environment Programme (UNEP) fulfilling its mandate of inspiring, informing and enabling nations and people to achieve sustainable development.

MESA partnership

UNEP is a global leader in science-based environmental policy. Globally, there is an urgent need to develop useful, high quality training and knowledge materials to assist universities and other tertiary institutions in integrating environment and sustainability issues into the teaching, research and management of their institutions. To excel and be credible in science-based environmental policy, UNEP seeks to strengthen its interactions with universities and to develop new relationships as well. UNEP's continuing successful engagement with universities, for example under Mainstreaming Environment and Sustainability into African Universities (MESA),[1] gives it a comparative advantage.

Universities serve not only as a conduit to reach the future generation but also as a pool of intellectual capital that can be generated, utilized immediately and linked to policy. Universities play a major role in socio-economic and cultural behavioural change. In addition, they are taking and will continue to take the lead in the planning and implementation of future sustainable development initiatives. The choice of universities is strategic because:

- In their role as producers and transmitters of knowledge, universities are vital in formulating, influencing and implementing policies, guidelines and management strategies in environmental and sustainable development-related fields. Most governments not only depend on experts from universities, but also rely on and utilize research outputs from them
- Universities' core mission of teaching is an instrumental process of building and developing

Image: UNEP

Participants at the 1st MESA Workshop, Nairobi, Kenya, 2008

critically highly skilled human resources that feed into national and global policy development and implementation. Engaging this pool of expertise and change agents has the potential to contribute immensely to shaping environmental policy and action at the local and national levels
- Most universities have, as part of their core mission, local community engagement and outreach activities. Through partnerships with universities, UNEP can leverage universities' outreach work with other stakeholders and contribute to local and national development processes.[2]

MESA is being implemented in three phases.
The first phase (2005-2006) of the project implementation was focused on the process of establishing and piloting MESA. During Phase one, an active network of African universities willing to participate in mainstreaming environment and sustainability issues was established. They provided an effective partnership framework for the MESA programme, with active participation from partners including United Nations Educational, Scientific and Cultural Organisation (UNESCO), United Nations University (UNU) and Association of African Universities (AAU). A training programme with a toolkit of flexible materials for use by African academics to conceptualize and plan for multi-disciplinary education for sustainable development (ESD) innovations in a range of university disciplines was developed, and the materials have been translated into French (with funding from UNESCO), to expand the programme into major regions of Africa.

There have been three pilot training programmes involving more than 87 academics from African universities. The first MESA Awards were held at the World Environmental Education Congress (WEEC) from 2-6 June 2007 in Durban, South Africa. Two universities[3] were recognised for their efforts in mainstreaming environment and sustainability into their programmes and activities. Forty-five university professors received certificates of appreciation for their university-based innovations in teaching, research and community, private sector engagement and management. The innovations were judged, among other things, on their relevance to the social, economic and environmental contexts in Africa and they reflect the way in which universities respond to changing social needs.

Further to ensuring that the rich resources UNEP produces reach out to universities to support teaching research and learning in sustainable development, UNEP held an Africa Environment Outlook (AEO)-MESA workshop. The aim of the workshop was to develop a comprehensive and flexible AEO module (conventional and IT-based) that would be adopted and used in African universities. The curriculum has been used in five pilot universities. MESA has been implemented in 90 universities in 42 countries and so far, seven universities have transformed their curricula to reflect environment and sustainability concerns. This phase also began a process of reaching out to university leadership to encourage the integration of environment and sustainability issues into teaching, learning and research with more support in terms of capacity-building and toolkits.

In October 2007, MESA was presented to the AAU Conference of Rectors, Vice Chancellors and Presidents (COREVIP) in Tripoli, Libya. The meeting recommended that vice chancellors, presidents and rectors should:
- Encourage and support innovations within the MESA framework in their institutions
- Spearhead the development of intra-university and inter-university research and action plans
- Promote pilot projects linking universities, civil society, communities and the private sector at the local level.

As a result of a meeting held on 17 April 2008, the MESA partnership programme was presented to Ugandan vice chancellors and members of the National Council for Higher Education at a one-day MESA orientation workshop. The workshop was organized by the Ugandan National Environmental Management Authority (NEMA) for leaders in the higher education fraternity. Such meetings constitute a niche for UNEP that can bring about positive environmental changes, not only in African universities but in the mainstream of government and society as well. The student component of the MESA programme held a two-week course in November 2007 in Njoro, Kenya. The Youth Encounter on Sustainability (YES) course was held in Africa for the first time and brought together 38 students (19 male and 19 female) from 25 countries. The YES Africa course offers intensive interdisciplinary training for upper-level university students and young professionals, aimed at sensitising the trainees on basic issues of sustainability. The course was held in partnership with ETH-Sustainability-Zurich.

The second phase (2007-2008) of the MESA partnership was an international training programme (ITP) on ESD in higher education institutions. Jointly organized by the Swedish International Development Cooperation Agency (SIDA), Ramboll Natura and UNEP, its objective is to support creative thinking and the development of change projects in the field of ESD in universities in Africa. This programme had participation from 31 participants from 28 institutions in 21 African countries with projects ranging from changes in institution-wide

Image: UNEP

Participants arriving at the first MESA Workshop, UN Office, Nairobi

Image: UNEP

Group photograph of the first MESA Workshop participants. Front row centre: Mr. Achim Steiner, Executive Director, UNEP and the Hon. John Michuki, Kenya's Minister for Environment and Mineral Resources

activities such as curriculum modifications to discipline-specific curriculum changes.

The third phase (2009-2011) aims at promoting the mainstreaming of environment and sustainability into teaching, learning and research and further into community outreach in at least 50 per cent of African universities. It is a follow-up to the ITP and will upscale the successes of the training programme and promote the positive lessons learned to at least 50 per cent of Africa's universities. Phase three will also promote teaching and research in the six UNEP priority themes of climate change, disasters and conflicts, ecosystem management, environmental governance, harmful substances and hazardous waste, resource efficiency: sustainable consumption and production. This phase will also see the translation of the MESA ESD toolkit into Portuguese and Arabic to reach out to Lusophone and Arabic Africa, including capacity-building programmes for course design, use of ICTs and UNEP materials, and strengthening the MESA electronic networking forum to adopt a proactive, developmental approach to networking. Also, this phase will see the establishment and formalization of a MESA focal point communications system in all participating universities, using existing university infrastructure and resources.

Introducing GUPES

From 2010 to 2011, MESA is being replicated at the global level under the Global University Partnership on Environment and Sustainability (GUPES) partnership programme. The main aim of GUPES is similar to MESA in promoting the integration of environment and sustainability concerns into teaching, research, community engagement and management of universities. UNEP will also partner with GUPES to guide knowledge generation in its thematic areas.

The initiative, in line with the Bali Strategic Plan, focuses on engaging with universities to influence policy by competency building and technology support at the global, regional and national levels. Furthermore GUPES will contribute to the promotion of the environment component of the United Nations Decade of Education for Sustainable Development (2005-2014) and the implementation of the Programme of Work 2010-11, which is replete with knowledge generation and capacity-building activities for UNEP's key stakeholder groups.

Outputs of GUPES in UNEP's Programme of Work 2010-2011 include:

- Creating an expanded network of universities on North/South and South/South modalities that integrate ecosystem management systematically into a wide range of disciplines, faculties, programmes and courses in universities, and focusing on integration of these concerns into university policies, management practices, community engagement and student activities. The expanded network should be measured on quantity and quality of research and teaching
- Establishing knowledge networks to inform and support key stakeholders in the reform of policies and the implementation of programmes for renewable energy, energy efficiency and reduced greenhouse gas emissions
- Ensuring that multi-disciplinary scientific networks are more strategically connected to policy makers and development practitioners, to integrate environment into development processes
- Establishing national and regional information networks and demonstrating that they support regional-level actions on chemical-related priority issues.

UNEP and the Caribbean sub-region have launched a similar programme, dubbed Mainstreaming Environment and Sustainability in Caribbean Universities (MESCA) under the GUPES programme with The University of West Indies (UWI) in Jamaica as the focal point. The first GUPES consultative meeting is planned for November 2010 to bring together stakeholders in shaping the direction of the global programme.

Child rights and equity through climate change education

Suchitra D. Sugar, Consultant, Climate Change and Environment Education, UNICEF,
Stephanie Hodge, Education Specialist, Cross Sector Coordination, UNICEF and
Sonia Sukdeo, Education Officer, Disaster Risk Reduction, UNICEF

UNICEF is contributing to the Decade of Education for Sustainable Development (DESD) through quality education, girls' empowerment initiatives and the mainstreaming of equity considerations[1] within its Basic Education and Gender Equality programme. UNICEF's ideological framework for good quality education is founded upon the Convention on the Rights of the Child (CRC). The application of the CRC to education provides a whole-child, equity-promoting and rights-based approach. It stresses that all children — but especially the marginalized — have a right to good quality education, including education on, and participation in, issues that affect their lives, such as climate change and environmental degradation. The CRC underpins the key principles that drive the process of making schools child-friendly. These include the principles of democratic participation, child-centredness, inclusion and safe, protective environments.

Over 72 million children are out of school.[2] In sub-Saharan Africa only 65 per cent of primary-school-aged children are in school — the lowest rates of primary school participation in the world. In UNICEF's 2010 publication, Progress for Children, UNICEF's Executive Director, Anthony Lake, states:

"Today, it is clear that we have made significant strides towards meeting the MDGs… But it is increasingly evident that our progress is uneven in many key areas. In fact, compelling data suggest that in the global push to achieve the MDGs, we are leaving behind

Image: Selim Iltus

School girls identifying environmental features and hazards in their community on a map that they have created

millions of the world's most disadvantaged, vulnerable and marginalized children".

The report highlights the inequities that are keeping us from reaching the MDGs, including universal primary education. Foremost among these are disparities due to poverty, gender and geographic location. In Liberia, children from the richest households are 3.5 times more likely than children from the poorest households and urban children are twice as likely as rural children to attend primary school. In Pakistan, girls from poor, rural households are far less likely to attend school than boys in the same situation. These three factors are inextricably linked with key environmental issues such as land degradation, forced migration, increasing urbanization, pollution and climate change.[3,4]

Quality education provides all learners with the capabilities they require to become economically productive, develop sustainable livelihoods, contribute to peaceful and democratic societies and enhance individual well-being. It is key for bringing about the changes in knowledge, skills and behaviours necessary for climate change adaptation. For example, education contributes to better health and longer life expectancy, reduces social costs of health, criminal justice and social security, and fosters social participation and social cohesion.[5] A single year of primary school increases the wages people earn later in life by 5-15 per cent. For each additional year of secondary school education, an individual's wages increase by 15-25 per cent (Global Campaign for Education 2010).

This is even more so for girls' and women's education. Educating young women is one of the key determinants for climate change adaptation and, according to the latest research, can even neutralize the impact of increasingly extreme weather events.[6]

UNICEF promotes countries' development of quality education through the Child-Friendly Schooling (CFS) approach. The CFS approach is a pragmatic pathway towards quality education that has evolved (and is still evolving) from the principles of children's rights. The pragmatic, flexible and comprehensive nature of the CFS approach has facilitated the inclusion of context specific and relevant elements of climate change adaptation into school curricula, facilities, construction and operations.

Currently, UNICEF Education is supporting countries to address climate change adaptation through climate change education in child-friendly schooling in the following ways:

- Supporting child-centred relevant education that incorporates disaster risk reduction, climate change and environmental curricula to empower children with the knowledge, skills and values that prepare them for a disaster situation in the short term and help them adapt to, thrive, and live sustainably in a changing environment in the long term
- Promoting sustainable facilities at schools, such as school gardens, rainwater harvesting and alternative energies, as a way to enrich the education experience while improving the school environment
- Retrofitting and constructing structurally sound schools, which are resilient to disasters caused by natural hazards, such as heavy rains, earthquakes and cyclones.

Image: © UNICEF/NYHQ2006-2459/Giacomo Pirozzi

A primary school classroom in Tarawa, the capital of the Pacific Island Republic of Kiribati, where children lack health care and education and are under threat from natural disasters

Image: © UNICEF/NYHQ2007-1390/Giacomo Pirozzi

A boy waters his plant in the school garden at the UNICEF-supported primary school in the village of Rubingo in Kigali Province, Rwanda

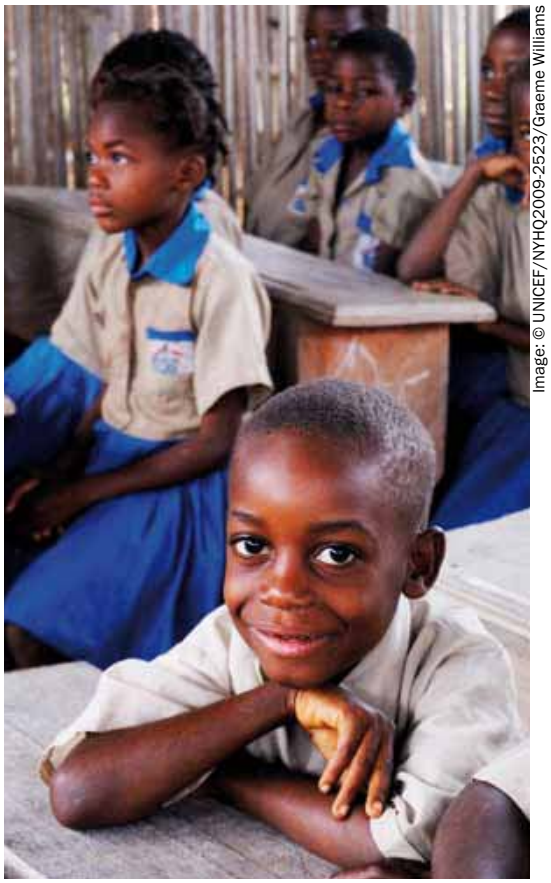


Image: © UNICEF/NYHQ2009-2523/Graeme Williams

The ORA D'Impfondo School near Impfondo, capital of the northern Likouala Province of Republic of the Congo, where UNICEF supports health, nutrition, water and sanitation, education and other interventions. The school provides basic education for indigenous Baka children

Climate change adaptation is dependent on countries' resilience, expertise and ability to strengthen their human resources. To help this process, UNICEF continues to place strong emphasis on capacity development. UNICEF has developed a Global Capacity Development Programme on Child-Friendly Schools, which has now been rolled out in countries and regions. Major components are the CFS reference manual and e-learning package.[7] Critical issues referred to in the manual and e-learning package are being dealt with in depth through modules and a resource pack.

UNICEF's official contribution to the DESD is the climate change and environmental education resource pack for the CFS manual, which provides guidance on the mainstreaming of a holistic approach to climate change education into schools, national policies and programmes. The resource pack is being prepared by UNICEF with inputs from the Inter-agency Committee on the Decade of Education for Sustainable Development.

Some illustrative projects

Though not directly supported by UNICEF, Brazil's innovative and successful model for the popularisation of local and global issues of environment and sustainability is an excellent demonstration of the application of children's rights to inclusion and democratic participation. The model was built up around the DESD and related international agreements. Participating schools and communities, with a special emphasis on marginalized groups, hold debates and take action on social and environmental problems in their communities for the chance to send a delegate to the National Children and Youth Conference for the Environment. Young people are given responsibility for most of the decision-making throughout the process and, as delegates returning from the Conference, play a central role in the continuation of environmental education in their schools and communities.

The Maldives, a nation of small islands with fragile ecosystems, has long recognized the importance of education and environmental sustainability. Strong political backing currently exists for building resilience to disasters caused by natural hazards and adaptation to climate change. Environmental education has been part of the national school curriculum since the 1980s but has been taught through the tradi-

Image: Carlos Vasquez

Child-friendly school built in Myanmar after Cyclone Nargis

tional exam-driven method of teaching practised in the Maldives, with great emphasis on 'rote' learning. As a result, an assessment revealed that, although communities were well aware of environmental problems, they did not know how to take action to address them. Addressing this gap through a more child-centred learning approach, the government, in partnership with UNICEF, designed a revised curriculum and teacher training course with emphasis on the development of knowledge and skills and exploration of attitudes and values through activity-oriented, inquiry-based teaching. The new child-centred learning approach will facilitate students to understand the world around them and think for a sustainable future.

Cyclone Nargis struck Myanmar in 2008, destroying hundreds of schools. In partnership with the government, UNICEF took on the project of re-building primary schools in some of the most affected districts so that they could withstand future storm surges and earthquakes. The schools were built sustainably with local materials. In addition to providing the children with a safe and protective school environment, the new schools took on other aspects promoted by the Child Friendly Schooling approach, including local participation in the construction process and the use of the school by the community in times of emergency. Most of these new schools have increased children's registration and attendance. Some have doubled their student populations and are also attended by children from other villages.

Preparing children for a sustainable future

Children form a large portion of the world's population: 27 per cent — or 1.8 billion people — are under the age of 15.[8] These children, especially poor children in developing countries, are disproportionately vulnerable to the impacts of environmental degradation and climate change and will have to live with the consequences of today's decisions. The DESD represents the power of education to unleash the hidden potential of these vulnerable children. They are the ones who can make the world into a better, more sustainable place to live. A quality education based on the child rights principles of democratic participation, child-centredness, inclusion and safe, protective environments is the key to unlocking children's potential to become leaders of a more sustainable future for all.

Perspectives on higher education for sustainable development: transformation for sustainability

Zinaida Fadeeva, United Nations University Institute of Advanced Studies

Rapid changes at all levels and pressing local and global sustainability issues require rethinking of how knowledge is generated, transmitted and utilized and how future decision makers and professionals are trained to address the compound challenges of sustainable development. As intellectual leaders and major contributors to the capacity development required for global transition to sustainability, institutions of higher education are expected to respond strongly and holistically to societal challenges. In order to do so, they must embark on the daunting task of transforming themselves and bringing about desired changes to society at large. The United Nations University (UNU) has responded to the UN Decade of Education for Sustainable Development (DESD) by launching international networks designed to strengthen the role of institutions of higher education in sustainable development and education for sustainable development (ESD), as well as developing postgraduate programmes in these subjects and other related fields.

Creating higher education for sustainable development (HESD) networks

The ESD Programme of the UNU Institute of Advanced Studies (UNU-IAS) fosters the involvement of academia globally in applied research, education and continued learning to resolve the pressing global problems that are the concern of the United Nations and its Member States.

This work is carried out by:

- The network for Promotion of Sustainability in Postgraduate Education and Research (ProSPER.Net)[1]
- The Regional Centres of Expertise on Education for Sustainable Development (RCEs).[2]

ProSPER.Net is an academic consortium for ESD that was launched in 2008 to reorient postgraduate education and research in the universities of Asia-Pacific towards more sustainable development. Currently 21 members strong and growing, the network brings together leading universities from the Asia-Pacific region that have significant education and research programmes in sustainable development and related fields.

Working closely with a number of important partners — the Ministry of the Environment of Japan, UNEP Regional Resource Centre for Asia and the Pacific, UNESCO Bangkok (Asia-Pacific Regional Office) and the Institute for Global Environment Strategies (IGES) — ProSPER.Net serves as a platform for collaboration among its members and other ESD actors, regionally and globally.

Image: UNU-IAS

Launching Ceremony of ProSPER.Net under the auspices of UNU-IAS, Hokkaido University, Japan, 21 June 2008

Over the last two years, member universities have carried out several projects critical for the transformation of higher education practices in the region, including:

- Reorientation of business school curricula towards sustainability
- Development of faculty training modules on sustainability
- Design and delivery of an e-learning programme on sustainable development practice in public policy
- Innovative pedagogies applied in regional poverty reduction programmes
- Alternative university appraisal for assessment of universities, based on their sustainability practices in research, teaching, outreach activities and campus operations.

The RCEs are networks of existing local institutions and stakeholders for ESD, mobilized to promote all types and levels of learning for a sustainable future. Institutions of higher education are encouraged to take the lead in developing RCEs as providers of guidance and leadership in education. As of August 2010, 77 local networks are officially acknowledged by UNU as RCEs in Asia, Africa, the Americas and Europe, and the global network of RCEs is expanding. In addition to working with a broad portfolio of ESD projects in their own regions, RCEs collaborate on operational and substantive issues across continents.

There is also a role for RCEs in the enhancement of inter-agency cooperation for HESD. Many UNESCO chairs in ESD play important roles in RCEs. For example, Okayama University of RCE Okayama is UNESCO Chair in Education and Research for Sustainable Development; the UNESCO Chair in ICT for ESD at the University of Crete took the lead in developing RCE Crete; and the UNESCO Chair in Higher Education for Sustainable Development, housed in the Institute for Environmental and Sustainability Communication at the Leuphana University of Lüneburg, is an active partner of RCE Hamburg.

Transforming organizational practices towards sustainability

Reorienting the education of future leaders and professionals

Higher education transformation requires changes in curriculum and teaching (educational content and pedagogy), research and administrative practices, and this can happen only in close collaboration with teaching and research faculties. Selected ProSPER.Net members have embarked on a series of projects for the reorientation of business schools through strategies such as development of case studies on social business and social entrepreneurship, surveys of ESD practices in business schools in the Asia-Pacific region, and developing courses and launching new graduate programmes, focusing on more sustainable business operations. A ProSPER.Net joint business school project facilitated by the Asian Institute of Technology led to the idea of reorienting engineering and architectural education – a project that is currently under development.

Faculty training on ESD and sustainable development

Transformation of universities requires changes to the ways in which faculty members teach, conduct research and interact with the broader society. Universiti Sains Malaysia coordinates a ProSPER.Net joint project on development of faculty training modules and resource materials for sustainability. The project aims at enhancing university faculty members' understanding of the concept and practice of sustainability by providing examples of how it can be integrated into educational and research practices in higher education settings.

Engaging young researchers and students

In addition to the responsibility of the faculty, ProSPER.Net partners also recognize the important role students can play in transforming higher education with their energy, concern for the future and commitment to a more just society and a cleaner environment. With the leadership of RMIT University, ProSPER.Net partners developed the Young Researchers' School — a programme that will enable graduate students and young post-doctoral researchers to engage with a variety of complex societal challenges in specific loca-

Image: © RCE Graz-Styria

Youth Workshop, RCE Graz-Styria

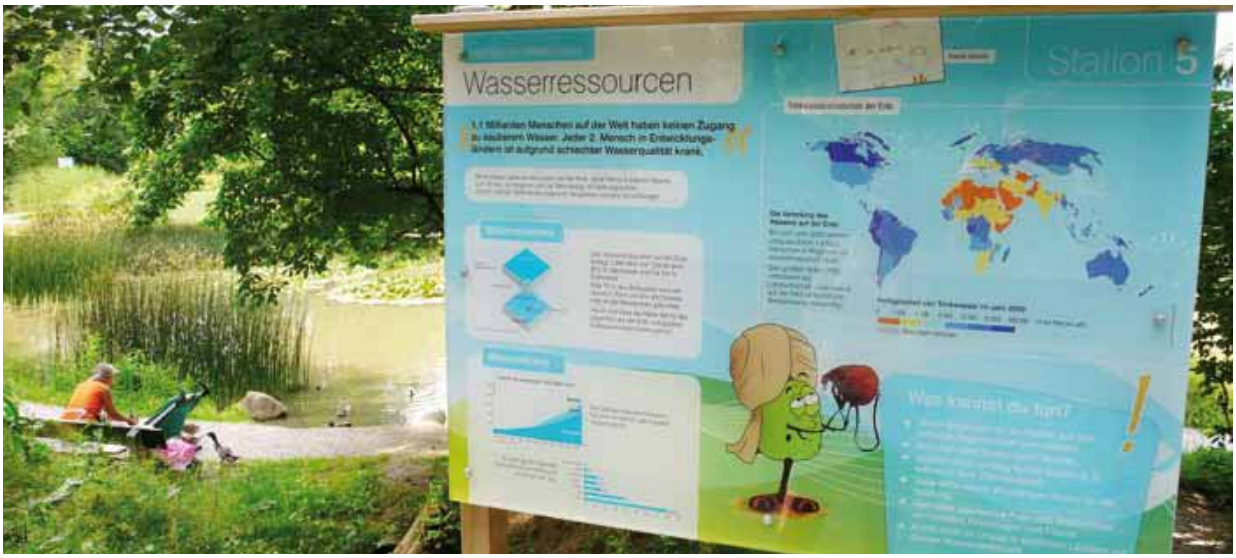


Image: © RCE Graz-Styria

Signboard on Water Resources, Sustainability Trail, Trofaiach, RCE Graz-Styria

tions. There are plans to hold annual researchers' schools in different regions, with the first hosted by the RMIT International University Viet Nam (RMIT Viet Nam) in 2010. It is hoped that ProSPER.Net will contribute to the creation of a network of sustainability scholars and professionals representing biophysical sciences, social sciences and humanities in the Asia-Pacific region.

Capacity development of policymakers

Policymakers are among the stakeholders who are particularly significant for HESD efforts. Member universities of ProSPER.Net have agreed to engage with capacity development of policymakers in the Asia-Pacific region to empower them to link science, policy and economics, to practise sustainable development and to become inclusive thinkers. A multidisciplinary online programme, hosted by TERI University (India) and supported by the expertise of other ProSPER.Net member universities, brings together, in a virtual space, participants representing different levels of governments from more than a dozen countries in the Asia-Pacific region. Participants completing all modules will be awarded a Diploma in Sustainable Development Practices in Public Policy.

Leading local partnerships for ESD: university-community collaboration

Many RCEs around the world have universities as their leading members. In fact, including at least one local higher education institution as a network partner is a prerequisite for acknowledgement as an RCE. This requirement is based on the UNU's belief that stronger engagement of higher education institutions with other societal stakeholders creates a fertile ground where important transboundary (transdisciplinary, cross-sectoral and intergenerational) learning and actions will take place. Many RCEs show a remarkable degree of collaboration between universities and communities for ESD and sustainable development.

For example, Rhodes University, which holds the secretariat of RCE Makana and Rural Western Cape (South Africa), initiated a number of community-based, grassroots and participatory projects. Its faculty of education, in collaboration with the local municipality, the Adult Basic Education Training Centre and the Institute for Water Research, established a workplace learning research programme in the context of service delivery and sustainable development programmes and projects.

Three universities that are members of the RCE Saskatchewan (Canada) facilitated the reframing of questions regarding the possibility of building a nuclear power plant for inclusion in the broader discussion of Saskatchewan's energy future. Subsequently, they were able to provide an input to the question of how the government can best meet the energy needs of the province through actions that include energy conservation, renewable energy generation, energy storage and upgrading to smart-grid technology. Input to the long-term energy planning strategy was provided from an interdisciplinary perspective and with contributions from other regional partners.

University Sains Malaysia (USM) — the facilitator of the RCE Penang (Malaysia) — has initiated a Malaysian Citizenship Project that aims at enabling high schools to address sustainable development challenges in their vicinities. In consultation with the authorities relevant to particular challenges (such as the city council, members of parliament, health agencies and environmental agencies of the districts), the students analysed the problems and developed possible solutions. Beginning with the schools in the home region of Penang, the USM faculty facilitated engagement of students from at least 120 secondary schools from five different states in Malaysia.

In 2007, the University of Graz (Austria) initiated the RCE Graz-Styria to enhance cooperation between university and society, together with regional partners such as NGOs, schools and public institutions. Projects undertaken by this RCE include the development of a sustainability trail in cooperation with students and a youth centre; an intergenerational course focusing on sustainability processes, which

Image: UNU-ISP

Symposium and Workshop on Education for Sustainable Development in Africa (ESDA), Nairobi, Kenya, 1-2 March 2010

brings together students and regional actors from different professions, including retirees; and cooperation with the national focal point of the UN Global Compact Network to intensify the connection between the university and business partners around topics such as human rights, ESD and supply chain management.

Seeking synergies and establishing platforms for ESD dialogue

Building on its capability for international collaboration, UNU, together with its close partners and champions of ESD, have brought together universities in different continents for collaborative alliances. These differ from more conventional academic partnerships in that they are formed with an understanding that in order to contribute meaningfully to societal challenges, they have to address the challenge of transforming the whole (higher) educational system. A complex work of contributing to change while changing themselves is unfolding among universities that are ESD champions.

European higher education networking for sustainability

In the past several years, a group of European universities, most of which are involved in the UNU's RCE initiative, have made an effort to reactivate COPERNICUS, the European Network on Higher Education for Sustainable Development.[3] In the course of a founding workshop organized by the University of Lüneburg and the University of Graz, university representatives from across Europe were invited to work together on further development of the European Network on HESD. Outcomes of this workshop included the establishment of seven working groups, each aiming at different aspects of moving European higher education towards sustainable development. Groups that organize workshops such as this one provide meeting points and platforms to share experiences. For example, participants in the 'innovative teaching and learning' group exchange tools and teaching materials. The 'student involvement' group highlights the importance of students in the implementation of sustainability in relevant institutions and provides a Europe-wide platform for students.

The vision of the COPERNICUS Alliance is based on the aims of the COPERNICUS Charter that was developed in 1993 by the European Rectors Conference. To ensure the continuity of European progress in this field, the Alliance is managed as an NGO, with a secretariat serving the members. One of the services provided by the secretariat is the funding of working groups so that they can carry out, among other work, studies focusing on the sustainability progress of European higher education.

University members of the RCEs engage in collective efforts to create platforms to support university collaboration in interdisciplinary research and teaching, policymaking, capacity-building and technology transfer. Universities that play major roles in RCE Rhine-Meuse and RCE Graz-Styria, together with other European universities, have developed an EU-funded project called 3-Lensus (Lifelong Learning Network for Sustainable Development), which is developing a database of innovative projects promoting ESD.[4] The 3-Lensus project focuses on the knowledge triangle of education, research and innovation for regional sustainable development. One of the important aims of the project is to facilitate collaboration between higher education institutions and regional partners.

African higher education networking for sustainability

More than one hundred academics from universities across the African continent have formed the Mainstreaming Environment and Sustainability into African Universities (MESA) network. All RCEs in Africa (currently 12) are linked to the MESA initiative, which is UNEP's major contribution to the DESD. In fact, the establishment of RCEs and sub-regional MESA networks has been included as an important target in MESA Phase 2 (2008-2010) and Phase 3 (2011-2014). Started in 2004 with the goal of enhancing the quality and significance of universities in Africa in the context of sustainable development, MESA strives to make universities more relevant to local communities, civil society and business.

African universities actively engaged in existing RCEs, as well as those developing new RCEs, are key members of the MESA network. In its report to the 2009 UNESCO World Conference on ESD,[5] MESA highlighted impressive results of its activities, including facilitating the development of more than 65 courses, numerous research programmes, policy work, student actions and engagement with local communities. African RCEs therefore are also contributing to the African Union Agenda to revitalize higher education in Africa and to ensure that universities are able to work closely with their communities.

Cross-regional higher education collaboration

Impressive collaborative networks are developing on different continents in parallel with programmes that open opportunities for further South-South and North-South collaboration. Discussions on finding synergies among existing networks by mapping their outreach, educational and research activities began during the First International MESA Conference in Nairobi in November 2008. Continuation of this discussion is planned on the occasion of the Fifth International Barcelona Conference on Higher Education, organized by GUNI (Global University Network for Innovation), in November 2010.

An interesting example of cross-continental partnership is offered by the Education for Sustainable Development in Africa (ESDA) project of the UNU Institute of Sustainability and Peace (UNU-ISP). ESDA facilitates engagement of Japanese universities with African universities towards development of Master's-level programmes offered jointly by African universities in the areas significant for sustainable development of African countries. There are three working groups focusing on:

- Integrated environmental, economic and social development in rural Africa, led by the University of Ghana (Ghana) with active partner cooperation of Kwame Nkrumah University of Science and Technology (Ghana), the University of Development Studies (Ghana) and the University of Ibadan (Nigeria) and input from Nagoya University (Japan) and UNU-ISP and UNU Institute for Natural Resources in Africa based in Accra, Ghana
- Community-based innovation for sustainable urban development in Africa, led by Kenyatta University (Kenya) with partner cooperation of the University of Nairobi (Kenya) and Stellenbosch University (South Africa) and support of UNEP, UN-HABITAT, UNESCO/Nairobi, the University of Tokyo (Japan) and UNU-IAS
- Management of mining and mineral resources for sustainable development in Africa, led by the University of Cape Town (South Africa) with partner cooperation of the University of the Witwatersrand (South Africa) and the University of Zambia (Zambia).

The outputs of ESDA are expected to become UNU's major contributions to TICAD V (Fifth Tokyo International Conference on African Development) in 2013 and to the DESD.

Creating enabling environments to transform governance and management

The interest in measuring university performance has dramatically increased in recent years. This is driven by a number of factors, including internal needs to benchmark university performance, the need to demonstrate effective use of resources to government funding agencies, and the interest among the public in university rankings. But while there is a clear need for objective performance measures, there is much debate concerning what dimensions of performance to measure, how to measure them, and how this relates to the mission of the university and the concerns of its various stakeholders. Most seriously, use of inappropriate measures may have the effect of driving the development of higher education in undesirable directions.

The existing dominant higher education ranking systems often reward discipline-oriented academic output, favour low student/staff ratios, and rely on peer reviewers from particular regions,[6] disadvantaging new universities, particularly in developing countries, as well as universities that strive towards more holistic and sustainability-oriented learning and research.

This challenge, however, is gradually being recognised, with the emergence of new assessment schemes that look at the ESD performance of higher education institutions. For example, the Alternative University Appraisal (AUA) project initiated under the auspices of ProSPER.Net aims at enabling higher education institutions to conduct self-assessment while providing benchmarking for research conducted in the broad area of sustainable development.[7]

The road to sustainability

HESD pioneers face pressure to find solutions for the pressing problems of today and at the same time to carry out research whose long-term goals are yet to be widely recognised. They must balance independence and potentially radical innovations in their own structures and actions with resources that are often given on the basis of traditional structures and processes.

The majority of higher education institutions with tremendous intellectual and other resources still need to undergo transformation to act as leaders in developing opportunities for the global society. The holistic and cross-cutting nature of the concept of sustainability enables institutions of higher education to formulate their visions, goals and strategies in novel ways that are, at the same time, culturally relevant and appropriate for the regions where they operate. It is our hope that the concerted efforts of DESD stakeholders, including HESD champions, will create the necessary conditions for all universities to become true partners on the road to sustainability.

Co-author: Yoko Mochizuki

Regional Centres of Expertise on Education for Sustainable Development: advancing partnerships across boundaries

Yoko Mochizuki and Sampreethi Aipanjiguly,
United Nations University Institute of Advanced Studies

The concept of Regional Centres of Expertise on Education for Sustainable Development (RCEs) was developed by the United Nations University (UNU) to promote partnerships for education for sustainable development (ESD) at local and global levels. At the UNU-UNESCO International Conference on Globalization and ESD in June 2005 in Nagoya, Japan, which celebrated the Asia-Pacific launch of the DESD, the UNU launched the first group of seven RCEs. Since that time, the number of RCEs has increased significantly and as of August 2010, the expanding global network of RCEs comprises 77 RCEs worldwide: in Asia, the Pacific, Europe, the Middle East, Africa and the Americas. RCEs, both individually and collectively, aspire to achieve the goals of the DESD.

What is an RCE?

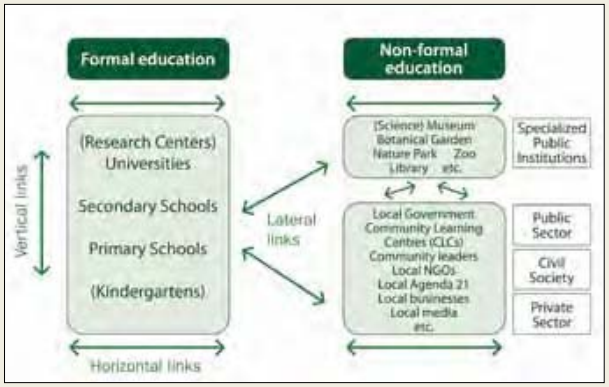
An RCE is not a physical centre but a network of existing institutions with joint strategies to advance ESD in the local regions in which they operate. The RCE initiative mobilizes schools, institutions of higher education, local public authorities, non-governmental organizations (NGOs), civil society organizations, businesses, media and other local organizations, synergizing their activities and developing new collective practices. RCEs assist with the enhancement of horizontal links between schools at the same level of education, vertical alignment of curricula — from primary school through university education — and development of lateral linkages between formal and non-formal education.

The UNESCO's Mid-Decade Review Report, 2009 had this to say about RCEs: "The networked Regional Centres of Expertise, supported by UNU-IAS, may serve as an example of how different local groups in society, who do not ordinarily work together but are bound by mutual sustainability issues, find themselves working creatively towards their improvement."

By providing local stakeholders with an opportunity to design their own strategies in accordance with regional strengths and needs, RCEs encourage them to focus on

Image: © RCE Graz Styria

Participants in an intergenerational course on sustainable development



Collaborative links within an RCE

Source: UNU-IAS

appropriate, flexible and innovative actions rather than rigidly formulated norms for what should be done and achieved. Criteria for RCE acknowledgement give local stakeholders the opportunity to design an institutional mechanism for mobilization, coordination and learning that best fits the regional realities and ambitions.

While the geographical scope of RCE operations is defined by the stakeholders, it has to satisfy a requirement of being large enough to allow diversity and significance in the number of participating partners but small enough to allow face-to-face interaction among them. With rare exceptions, RCEs operate within sub-national territories such as Saskatchewan (Canada), Wales (UK), Crete (Greece), Cebu (Philippines) and KwaZulu Natal (South Africa).

Having local/regional educational and research actions as their primary concern, RCEs contribute to the development of the Global Learning Space (GLS) through exchange of experiences, collaborative research and educational projects within and outside the RCE community.

In 2006, the Ubuntu Alliance — the consortium of leading international organizations representing educational and research institutions — established the Committee of Peers for RCEs. The Committee reviews applications for new RCEs and provides recommendations to the UNU during the RCE acknowledgement process. Advice from organizations that are considered leaders in the areas of science, technology and ESD facilitates alignment of the RCEs' goals with the broader DESD agenda and strategic implementation of these goals.

In order to join the global RCE community, a network of local stakeholders of ESD needs to address the following essential elements of an RCE:

- Governance: establishment of governance principles and coordination mechanism among the partners
- Collaboration: engagement of both formal and non-formal education organizations and a diverse array of partners, so that the RCE addresses all three dimensions of sustainable development (environment, economy and society) as a network
- Research and Development (R&D): incorporation of R&D activities to enhance ESD practices and to address capacity-building for sustainability challenges in the region
- Transformative Education: awareness raising, training, and reorientation of existing education for transition towards sustainability.

Evolution of the RCE community

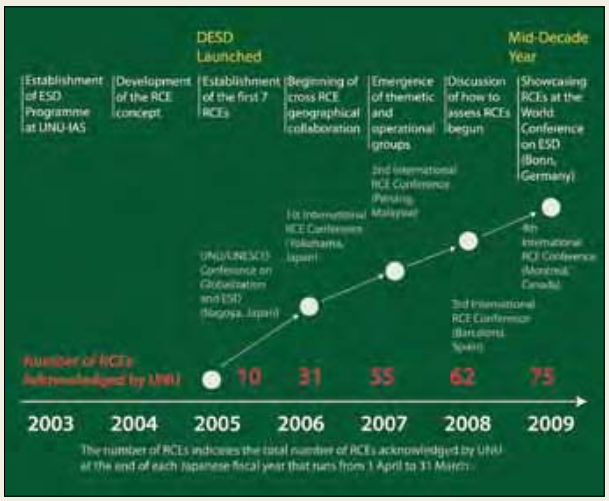
Five years after the launch of the first RCEs, the RCE community has achieved results that are significant, innovative and often unanticipated by the developers of the concept. With growing membership — the community is 77 members strong and growing — the geographic, thematic and operational partnerships of RCEs have been established.

Collaboration at the continental level was the first form of inter-RCE engagement that emerged in a variety of forms in the Americas, Europe, Africa and Asia-Pacific. North American RCEs exchange information and align their activities through regular telephone conferences hosted, until recently, by Environment Canada. African RCEs plan their sub-regional coordinating meetings in conjunction with other ESD events, such as those organized by the Wildlife Society of South Africa (WESSA). The recent consultation among African RCEs revealed the need for an additional online communication platform that would assist experience exchange between the meetings and connect RCEs in various regions of Africa. European and Asia-Pacific RCEs meet at the annual face-to-face meetings hosted, in turn, by individual RCEs. Communication across continents occurs during the annual International RCE conferences organized by the United Nations University Institute of Advanced Studies (UNU-IAS), through the use of ICT tools and projects and thematic activities.

The operational activities of RCEs are centred around issues like fundraising, communication and assessment. Working groups on each of these topics comprise RCE representatives who bring into discussion perspectives, concerns and lessons from their regions. The annual meeting of RCEs provides an opportunity to develop elements of operational strategies that are later acted upon by the Global RCE Service Centre at UNU-IAS and by the RCEs that have taken on the responsibility of implementation. The topic of assessment, in particular, has sparked the interest of RCEs and those interested in their performance. In-depth discussion among the partners has led to the understanding that complex, dynamic and diverse networks of RCEs would need a flexible and enabling assessment system. Such a system, grounded in the notions of self-assessment, networking, participation, progressive learning and the importance of different dimensions of sustainability, has been designed and is currently being tested by RCEs.

Thematic collaboration among RCEs is guided by generically defined topics such as biodiversity, health, climate, sustainable production and consumption, poverty, youth, e-learning, teacher training for ESD and institutions of higher education. RCEs are primarily responsible for defining priorities for actions and *modus operandi* in each of the themes. Working with thematic areas is not seen as compartmentalization of ESD but as a way to understand and pursue a particular challenge, for example health, in the context of ESD. It is also a

Evolution of RCEs



Source: UNU-IAS

way to engage with regional partners who are not yet engaged in ESD but are active in a particular sustainability area or working for a specific sector. In this way, RCEs bring together more partners in addition to the original stakeholders who initiated the RCE.

Collaborative projects of RCEs

International collaboration and contribution to global issues

While thematic and operational groups are often initiated and maintained by the RCEs, the Global RCE Service Centre at UNU-IAS facilitates these activities by enabling electronic communication and face-to-face meetings, providing conceptual input and establishing linkages to expert, policy makers and various international processes on sustainable development. For example, participation of RCEs Penang and Saskatchewan in the side events of the eighteenth meeting of the Commission for Sustainable Development (CSD 18), held in May 2010 in New York, enabled the RCEs to contribute to the discussion on regional sustainable consumption and production (SCP) challenges and the role of RCEs in addressing them. Similarly, RCEs active in the ESD and biodiversity group, in preparation for the tenth Conference of the Parties of the Convention on Biological Diversity (CBD-COP10) are consolidating their regional actions and beginning strategic alignment of RCE community contributions to the CBD process.

The RCEs' work on developing joint projects is often accompanied by development of structures that would facilitate ongoing support for such projects. For example, eight RCEs from Bangalore, Cairo, Cebu, Kodagu, Kyrgyzstan, Makana, Penang and Jogjakarta took part in a planning workshop on Traditional Medicine and Health held in Bangalore, India, in November 2009. In addition to the discussion of the projects, whose topics ranged from primary health care to sustainable livelihood through traditional medicine, they explored conceptual, strategic and operational issues related to establishment of the global framework for working with ESD and health for the whole RCE community. As the workshop was strategically organized back-to-back with the international exchange and conference of traditional healers, the RCE representatives also had an opportunity to establish linkages with organizations and experts on the topic.

Image: © RCE Penang

Recycling workshop in Penang, Malaysia

Working with ESD in the regions

To illustrate the innovative nature, diversity and significance of RCE projects in the regions, this section highlights some examples of the RCEs' collaborative activities. Regular exchange of information on the projects, through a quarterly bulletin, Skype conferences and regional or global meetings, has led to a growing body of ESD expertise for the RCEs and the broader community. For decision makers, such projects often serve as innovative experiments in ESD and sustainability.

RCE Kano (Nigeria) – working with Koranic schools: challenges of rural-urban migration

There are four times as many Koranic schools as Western conventional schools in the Kano state of Nigeria. The number of pupils in these schools is five times the number of pupils and wards in conventional schools. RCE Kano observed that most students of Koranic schools take up jobs away from the villages, thus increasing rural-urban migration. The RCE is working with both teachers and students in these schools to promote the understanding that life in rural areas provides opportunities for farming, that the local and traditional food in rural areas is more nutritious than that available in cities, and that some students are too young to live away from their parents. The RCE is

RCEs around the world

Source: UNU-IAS

also reaching out to parents and is planning to recruit ex-students to the programme.

RCE Hyogo-Kobe – disaster mitigation and ESD
Stakeholders of RCE Hyogo-Kobe view disaster prevention and mitigation as an important aspect of ESD work in their region, which in 1995 suffered the tragedy of the Great Hanshin-Awaji Earthquake (Kobe Earthquake). The Science Cafe, which promotes dialogue and collaboration between scientists and citizens, is one of the activities that aim at making a culture of disaster prevention and mitigation a part of people's everyday life.

RCE Saskatchewan (Canada) – innovation and learning for more sustainable consumption and production of services
The Sharing Productive Capital Project is an applied research project led by RCE Saskatchewan with the support of Luther College at the University of Regina, the University's Department of Computer Science, and the Craik Sustainable Learning Project. People and organizations in the region volunteer productive capital, such as machines, tools and buildings, while software is used to keep track of the available assets. Participants in the project learn about their place in the systems of consumption and production and about opportunities for delivering services in the community.

RCE Skåne (Sweden) – innovation, learning and capacity development for sustainable regional food systems
RCE Skåne facilitated a project aimed at developing knowledge about sustainable food systems among partners in the municipality of Malmö, Sweden's first Fair Trade certified municipality. The project unfolded around the ambition of increasing the amount of organic food in school meals. Under this project, while the municipality,

Image: © RCE Zomba

Students of environmental science plant trees, Zomba, Malawi

Image: UNU-IAS

Launching ceremony of RCE Greater Nairobi

suppliers and schools worked on the development of a new organic food supply chain, parents and pupils learned about SCP and food at home, using specially produced materials. Conferences and training of teachers focused on food and sustainability. The process of certifying Malmö as a Fair Trade city contributed to multi-level actions and learning for SCP.

RCE contribution to the DESD

As a global multi-stakeholder initiative for ESD in the context of the DESD, the RCE movement became a unique experiment in the mobilization of ESD partners at both local and global levels. Five years of experience point to a variety of value-added functions that RCEs bring to the regions. RCEs are seen as a meeting point for partners, a clearing house, a knowledge broker, a platform for information exchange, a community of practice, a mechanism for multi-stakeholder social learning and a learning network.

In some regions, where collaborative ESD and SD activities were not well established, for example in Kyrgyzstan, RCEs encouraged ESD partnerships while giving the stakeholders legitimacy and an opportunity to seek additional political and resource support. Regions rich in ESD experience, as in the case of the home region of RCE Rhine-Meuse, benefited from the coordination of ongoing partnerships provided by RCEs. The RCEs brought together historically competing partners, as at RCE Saskatchewan, and facilitated the opening of spaces for cultural dialogue, as at RCE North East, UK. In keeping with the RCE concept of bridging the gaps between different levels of formal education as well as between partners representing informal and non-formal education, they created or reinforced horizontal, vertical and lateral linkages among the partners. In doing so, RCEs allowed those partners that were not yet engaged in ESD to join the learning communities, as well as already active partners. For example, many Indian RCEs, led by NGOs, have reported increased interest from institutions of higher education in working collaboratively. The legitimacy that comes with the RCEs' recognition by the UNU could attract, as at RCE Saskatchewan, the interest of influential partners and decision makers.

The RCE initiative contributes to the DESD by creating platforms for local actors to articulate a global vision of ESD in local terms. Not only does it bring together stakeholders across knowledge and sectoral boundaries in a particular region, it also brings together ESD stakeholders across geographic boundaries. The expansion of a global network of RCEs will be a valuable visible output of the DESD, with the number of RCEs serving as an indicator of the vitality of local initiatives for ESD.

Exciting prospects

The growing number of RCEs indicates recognition of the RCE strategy's potential to mobilize regional stakeholders, to give educators a voice, and to explore new practices in transformative education and action research locally and internationally. Shaped by the visions of learning and sustainability of many stakeholders, RCEs offer a rich opportunity for learning and experimentation. With many ESD and SD questions still unanswered, the partners collectively define and redefine regional challenges, innovate and test ESD and SD solutions, and develop joint resources and strategies. A giant social experiment is thus unfolding all over the world.

Co-author: Zinaida Fadeeva

ESD in science: revolutionary human resource development in science and engineering

Tokyo Institute of Technology International Office

UNESCO defines sustainable development as "seeking to meet the needs of the present without compromising those of future generations" and emphasizes the importance of "learning our way out of current social and environmental problems and learning to live sustainably." Science and technology can serve as a vehicle to promote sustainable development in various contexts. Science for sustainable development is required across a wide range of fields, including new emerging diseases, renewable and alternative energy, prevention of natural disasters, and water and environmental resources, as well as climate change. At the same time, challenges for science in education are manifold, with a trend of declining university enrolment figures for science and technology, insufficient curricular focus on Millennium Development Goals and the exploitation of new technologies, such as cyber-terrorism and misuse of biotechnology. In this context, an attractive programme to develop the human capacity to use science for sustainable development faces growing demand.

Outline of the Tokyo Tech-UNESCO International Course for Advanced Research

Education for sustainable development requires a long-term goal, with commitment to develop individual and institutional capacity to plan, implement and improve development activities. The Tokyo Institute of Technology (Tokyo Tech), in collaboration with UNESCO and the Ministry of Education, Culture, Sports Science and Technology in Japan, has over 40 years of experience of working closely with potential young researchers from 60 different countries in the fields of chemistry and chemical engineering, as well as the environment. The Tokyo Tech-UNESCO International Course For Advanced Research was established in 1965, with the objective of educating high-level scientists, researchers and university faculty members in developing countries through specialized scientific research training programmes conducted in English. Young

Image: Tokyo Institute of Technology

Panel discussion at Tokyo Tech — UNESCO Fellows Symposium, Tokyo, 2009

researchers from developing countries selected topics that would be applicable to their field of specialization. Further, in the 1960s it was already expected that the programme would promote international exchange, contributing to social and economic development in the countries of the fellows. During this programme, 150 faculty members of Tokyo Tech, not limited to chemistry and chemical engineering, but also covering the fields of material science, bioengineering, energy and environment, were ready to collaborate in their research to meet the demands of fellows. It aimed to fortify research partnerships, building networks for research cooperation in the region. This one-year programme was characterized by its integrated approach of combining specific research and laboratory work with Japanese language and culture courses, and technical visits to prominent industries and factories of Japan. Through a wide range of activities, human networks among participating researchers were cultivated across four continents. In 2004, the programme evolved to meet the needs of researchers, particularly in the field of water resources management and the environment, along with the mid-term strategy of UNESCO, and thus focused on problem-solving approaches through specific project-oriented research topics. The Tokyo Tech-UNESCO International Course created alumni of over 500 professionals in 60 countries and regions, of which the majority have been engaged in research and educational activities in science and technology in their own nations.

In 2009, these networks flourished into the Alumni Association of Tokyo Tech UNESCO Course (ATTUNE) as a platform to share research information and to promote human resources exchanges, with a focus on finding applied solutions catering to local needs. During the Tokyo Tech-UNESCO symposium, more than 100 fellows of the programme gathered in Tokyo, actively exchanging current research topics and activities, and providing assistance in promoting sustainable development throughout the different countries.

Impact of Tokyo Tech-UNESCO International Course For Advanced Research

Although a human resource development programme that addresses local needs is considered important, it is not an easy task to measure the impact of such research-oriented training programmes. In an effort to argue the degree of impact, Tokyo Tech conducted extensive written evaluations with the fellows of the programme in 2002. Questions covering the level of satisfaction with the programme and the degree of fellows' contribution to their home nations were compiled and sent to 500 fellows. A total of 171 responses were received and evaluated. In this analysis, there are three particularly significant aspects that illustrate the impact of the Tokyo Tech-UNESCO International Course: individual career; contribution to own country; and relationship between Japan and own country. Firstly, 95 per cent of the fellows who responded believe that what they learned from the programme was very valuable or valuable for developing their career. Secondly, 94 per cent of the respondents believe that they had contributed to the development of their own country since the programme. Thirdly, 85 per cent think that they have contributed to the development of the relationship between Japan and their home country. Further, 92 per cent responded that their own research interest matched that of the host professor. This is significant feedback from the fellows, suggesting a strong motivation to continue research and development activities, and utilize research outcomes in their own professional fields. It was an encouraging indication in support of the ultimate goal of the programme. It is positive evidence that the majority of the fellows recognized that contributions were made to the development of their country.

Establishment of ATTUNE

In December 2009, the Tokyo Tech-UNESCO Fellows Symposium took place in Tokyo, Japan. It provided an opportunity for global partnerships between institutions and Tokyo Tech-UNESCO fellows. A total of 104 fellows gathered from 28 countries. During the symposium, 12 fellows representing seven regions gave presentations, sharing their most recent research and development experiences and contributions to the development of their countries and professional fields. Ninety-seven poster presentations received attention and triggered active discussion on the global issues of the 21st century, and on how science and technology can promote sustainable development. Also in attendance were Ambassador Tadamichi Yamamoto from the Permanent Delegation of Japan to UNESCO, and Professor Hubert Gijzen, director of the UNESCO Office, Jakarta. In his keynote speech, Mr. Yamamoto shared his belief in the importance of cooperation between UNESCO and external agencies such as Tokyo Tech for creating collaborative efforts to realize their shared visions. Professor Gijzen highlighted the specific need for international collaboration through regional programmes and flagship projects such as SWITCH (Sustainable Water Management Improves Tomorrow's Cities' Health), and COMPETENCE (Comprehensive Program to Enhance Technology, Engineering and Science Education) in Asia. A panel discussion on 'Enhancing the global human resources network in science and technology' and active discussion from the floor produced concrete and important recommendations.

1. Promote needs-based creative collaboration. Needs-based collaboration is necessary to identify and produce solutions applicable to locality. Depending on the level of advancement of basic research and laboratory infrastructure, different types of cooperation should be innovated to enhance the researchers' expertise from developing countries. This is the key to ESD in science
2. Find the right partners. With limited resources, institutions need to share the same concerns and thus, finding partners, individuals, and business communities is the key. UNESCO provides information and brings partners together.
   The 'driving person' in an institution plays an important role in making effective and action-oriented collaboration possible. As key players, participating researchers and institutions need to find programmes with strong areas of contributions on the right topics.
3. Mobilize innovation through a professional platform. To realize sustainable development, it is necessary to mobilize science and technology

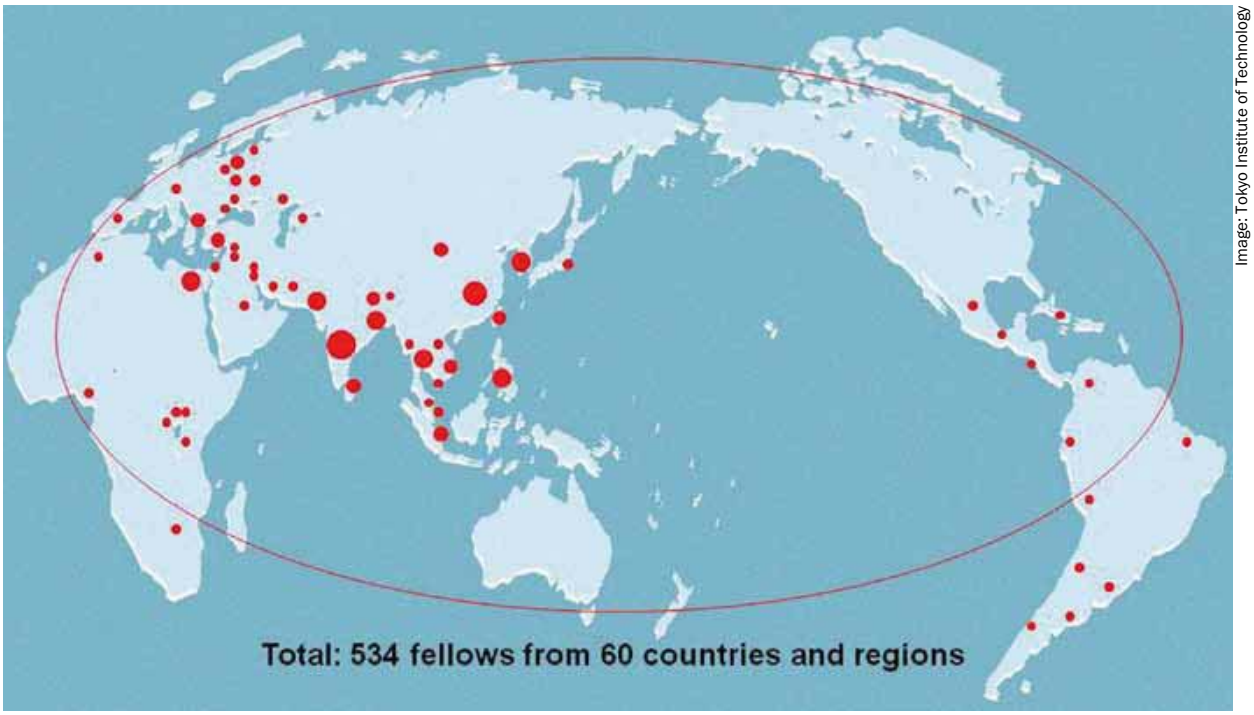


Image: Tokyo Institute of Technology

Global network of Tokyo Tech – UNESCO fellows (1965-2007)

innovation in collaboration, by continuing to build capacity for developing countries. A professional network of fellows can serve as a platform for curriculum building and teacher training programmes, together with research capacity-building in countries with such needs.

4. Go beyond scientists and engineers. The science and technology community alone cannot solve the global problems. Scientists and engineers can monitor and help predict the future, but for identifying feasible solutions, networking needs look further.

Ensuring a sustainable future

Tokyo Institute of Technology as a university of science and technology has a unique strength in providing a full range of research fields that cater to the needs of developing countries and promote sustainable development of these nations through scientific research and development. This meaningful research-oriented programme has flourished since the 1960s as a network of alumni covering 60 countries. ATTUNE plans to function as a platform for professionals to gather and discuss the most pressing issues that need to be tackled to ensure a sustainable world.

Tokyo Tech-UNESCO fellows' activities illustrate the great diversity of roles in which they have been engaged since their residence at Tokyo Tech. They demonstrate their involvement in fields from basic scientific research to higher education, in careers from diplomacy to medicine, and in ventures from environmental volunteering to cultural ambassadorship. The breadth and depth of knowledge and experience fostered during the course and in the following years are evident in its rich history. There is an unlimited number of opportunities for global networking among those contributing directly and indirectly to science for sustainable development. The aim of the university is to foster a better future through science and technology. The fellowship has certainly laid another foundation for that very goal.

UNESCO fellow contributing to sustainable development

Dr. Zukhra Kadirova (2004-2005. Specialization: Inorganic materials)

Dr. Zukhra Kadirova is Associate Professor of the Institute of General and Inorganic Chemistry of the Academy of Sciences in the Republic of Uzbekistan. She participated in the water resource management and environment course in 2004. She described this programme as having an "interdisciplinary character of modern researchs". The research training course specifically provided an opportunity to tackle actual problems and come up with feasible solutions, as well as expanding knowledge in water resource management and the environment in Japan. Skills in advanced methods of research using modern equipment facilities and chemical computer software helped her to continue her research and development in her home country. Currently, she is working to improve the simultaneous removal of harmful inorganic and organic ions from water and to find original ways of utilizing waste. She also develops preparation methods of new sorbents for water treatment on the base of adsorption and photocatalysis using UV and solar lights. She publishes her research and development outcomes in the Journal of Hazardous Materials and collaborates with Tokyo Institute of Technology.

Change for a better world: assessing the contribution of the DESD

Professor Daniella Tilbury, Chair of the UNESCO DESD Monitoring and Evaluation Expert Group and Director of Sustainability at the University of Gloucestershire, UK

The scope of the United Nations Decade of Eductaion for Sustainable Development (DESD) is broad and its potential effects are far-reaching. If it is successful, the DESD could transform not only education but also the quality of life for many people across the globe.[1] Acknowledging the potential impact of the DESD, UNESCO established a Monitoring and Evaluation Expert Group (MEEG) in 2007 to advise on appropriate monitoring mechanisms to assess global progress, and UNESCO's contribution to the implementation of the DESD.

After its first meeting in 2007, the MEEG recommended that UNESCO publish three DESD implementation reports during the life of the Decade:

- 2009: Focusing on the context and structure of work for ESD
- 2011: Focusing on processes and learning related to ESD
- 2015: Focusing on impacts and outcomes of the DESD.

The DESD International Implementation Scheme (UNESCO 2005) sets out the main trajectory of ESD as well as global milestones for the ten-year period, to provide the basis for reporting. The Scheme identifies monitoring and evaluation as part of the implementation strategy and recommends the development of indicators at all levels.

The 2009 DESD Monitoring and Evaluation Report[2] informed dialogue and reflections at Bonn as well as the UNESCO strategy for the second half of the DESD (UNESCO 2010). To prepare the 2011 report, and in keeping with previous experience of the implementation process of Phase I of the DESD monitoring and evaluation process, UNESCO commissioned a Phase II framework.[3]

Image: © UNESCO/Georges Malempré

Sustainable livelihoods: a solution to help populations to reduce poverty

Several components underpin the Phase II framework in its attempt to capture the diversity of policy and practice and to assess their contribution to the attainment of sustainable development. The cluster of data sources proposed includes an authoritative review of literature in ESD to clarify the types of learning processes that are most clearly aligned with ESD,[4] as well as the contributions of ESD learning activities to sustainable development.

Assessing the contribution of education and learning to sustainable development

Two key premises are embedded within the core ESD literature. The first is that at this time, no country in the world is living sustainably. As Prescott Allen notes in his book, *Wellbeing of Nations*, there is no roadmap or recipe for success and therefore we have to learn our way towards more sustainable futures.[5] This notion also underpins the UNESCO literature, which recognizes the international consensus that achieving sustainable development is essentially a process of learning.[6]

The second premise is that sustainable development requires a shift in the mental models that frame our thinking and inform our decisions and actions.[7] This is reflected in national and international policies from around the globe as well as the goals of specific national and regional programmes.[8]

This combined understanding of sustainable development provides the foundation for ESD efforts and informs the intended contributions of ESD activities to sustainable development. The ESD literature has only recently begun to feature evaluative studies that map the outcomes of ESD projects and programmes. For this reason, several case studies were written to inform Phase II of the DESD evaluation.[9] These studies provide important opportunities to assess these types of contributions in greater detail than is possible from studying the experiences documented in the existing literature. An analysis of the case studies reveals that changes are being nurtured at several levels: social, economic, environmental and educational. Although the effects and

Image: © UNESCO/Michel Ravassard

Everyone counts: all cultures contribute towards learning for a sustainable world

issues are often intertwined, it is helpful to consider the dynamics and priorities at each level.

Social change

A review of the case studies indicates that every project sought social change[10] for sustainable development. Social change occurs at a number of levels and in various contexts; for example, it can range from changing consumer choices, to challenging business practices, to rediscovering (or revaluing) traditional knowledge and local languages. The ESD initiatives under review focus on particular social groups such as business leaders, youth, students, farmers, academics or vulnerable/socially excluded communities. They aim to empower these groups through capacity-building to develop new ambitions for the future and to engage in social change to achieve them. These types of initiatives challenge visions, personal and professional practices, and lifestyle and consumer choices.

At the heart of the ESD initiatives is an assumption that current social frameworks and practices are exploiting people and their environments. This means that the attainment of sustainable development requires transformative change at the social and/or cultural level. Some programmes and strategies explicitly refer to the creation of social capital as a key outcome of ESD initiatives. This requires building the confidence and skills to support engagement among stakeholders, to improve their own and others' lives, livelihoods and environments.

Many initiatives encourage consideration of new social frameworks, which link the protection of traditional cultural practices and indigenous knowledge to the exploration of new economic markets and technological innovations that are more beneficial to people and to the planet. The type of capacity-building that is promoted is often culturally sensitive and responsive to local needs and cultures. Intercultural dialogue and respect for cultural diversity underpin many of these efforts to promote ESD and these kinds of outcomes are used to measure the success of initiatives.

Some ESD initiatives measured their success by assessing the degree of participation by target groups in sustainable development issues. Many such programmes prioritise citizen/employee/learner participation and view active engagement in social issues as key to the attainment of sustainable development. Other projects focus upon engagement of organizations or institutions, and their goals take the form of leadership for change towards sustainable development.

Increasingly, notions of building social capital or capacity for transition feature prominently in the goals of ESD programmes. The notion of transition considers the need for social adaptation to address current and future socio-economic and environmental realities. It involves civil society, governments and professionals in projects that illustrate social practices more clearly aligned with sustainability. These projects' impacts are assessed in terms of whether the 'demonstration' initiatives have influenced mindset and social practices.

Economic change

A large number of the case studies sought economic change. These varied from improving the employability prospects of young people, to seeking cost reductions in operational management, to providing incentives and/or skills to develop local economies. Many of these initiatives also sought improvement in the management of existing human, financial and natural resources, with the aim of reducing environmental impact as well as expenditure.

Interestingly, there was a clear sense across these initiatives that it is important to develop economic literacy alongside environmental literacy. The need to change current models of economic practice and not just pursue further economic development in line with existing models also underpinned the ESD programmes featured. New economic models, which were more responsible towards people and environments, were often explored as part of these initiatives. Such programmes often offered an opportunity for stakeholders to consider commercial ventures aligned with sustainable development (e.g. organic farming or ecotourism). Capacity-building for economic change was a common feature of most programmes and this involved the development of new skills and experiences to support more sustainable forms of development. The capacity-building components supported individuals and groups to change their own practices as well as those of the systems within which they operate.

Environmental change

Few of the ESD programmes reviewed measured their success in terms of environmental outcomes. There was a common understanding that there is a need to change the way we think and act to address unsustainable development. Therefore, most programmes sought primarily socio-economic or educational outcomes, as it was understood that this would lead to environmental change[11] in the long term.

Nevertheless, many of these initiatives did make direct and indirect contributions to environmental change. These contributions included improving environmental management practices of schools and universities; protecting biodiversity and natural resources in small rural communities; changing the consumer choices of shoppers; reducing the environmental impact of businesses; adoption of environment-friendly technolo-

Image:© UNESCO/Niamh Burke

Learning for change: the key to a sustainable future

gies in government; improving environmental health in excluded communities; and reducing ecological footprints and vulnerability to climate change.

Much has been written about the relationship between education (or learning) and environmental outcomes and impacts.[12] Many organizations that have conservation, biodiversity and environmental objectives at the heart of their missions seek environmental action and change and see education as an important platform for achieving these outcomes. It is important to note that there is widespread recognition that the achievement of these outcomes depends on processes of participation, inquiry and social learning to challenge existing unsustainable frameworks and practices, rather than the transmission of knowledge or the training of individuals and groups to behave in particular ways.

Educational change

Some of the initiatives reviewed targeted pupils and students, employees, civil servants or community members, and built their capacity to contribute to change. The majority of the initiatives, however, adopted a systemic approach to change, seeking to challenge existing educational systems, structures and/or practices, not just the knowledge and ability of learners to engage with sustainable development. The reorientation of education was seen as a core goal of these programmes. In other words, the contribution or success of these ESD initiatives was measured in terms of the extent of educational change that had been achieved.

The need to align education systems and practices to sustainable development is recognized as a priority by the DESD. This consists of:

- The adoption of new ways of thinking about teaching and learning
- The active engagement of the learner in an exploratory learning process which builds capacity as well as knowledge
- Changing education policies and curricula
- Changing the professional development of facilitators and the education of teachers
- Creating a culture of organizational learning and change towards sustainable development
- Creating a culture of social learning where informal contexts provide opportunities.

A smaller number of the programmes reviewed appear to have adopted a holistic approach to change. Some ESD programmes contributed to challenging adult and child mindsets regarding exploitation of the environment. They also encouraged teachers to adopt sustainability education thinking and pedagogies and to contribute to changing mainstream education practice. Some extended their contribution to supporting organisational learning and change across the education system, including the government ministries that supported it.

The shifting of pedagogical approaches rather than the embedding of core sustainable development content in the curriculum were key outcomes sought by many of the initiatives reviewed. Another frequent feature of these initiatives was the emphasis they placed upon the creation of learning partnerships.

The contribution of the DESD to a better world

Processes and learning in ESD[13] form the basis of the 2011 DESD Monitoring and Evaluation Report. In this context, the term 'processes' refers to engagement opportunities, pedagogical approaches, or teaching and learning styles adopted to implement ESD at different educational levels and in varied educational settings. 'Learning' for ESD refers to the learning experienced by all those engaged in ESD, including learners themselves, facilitators, coordinators and funders. Often learning in ESD is interpreted as gaining knowledge, values and theories related to sustainable development. In addition, the research undertaken as part of Phase II showed that ESD learning also means learning to ask critical questions, envision more positive futures, clarify one's own values, think systemically, respond through applied learning opportunities, and explore the dialectic between tradition and innovation.[14]

The literature has only recently begun to feature evaluative studies that map the intended and existing contribution of ESD to bringing about changes for a better world. Efforts can be assessed in terms of outcomes, outputs and impacts of initiatives. The review of initiatives suggests that it is possible to map a wide range of contributions through ESD to economic, environmental, social (including cultural) and educational change. A range of potential contributions, themes and priorities is apparent across these key initiatives.

There is a need to recognize, however, that ESD remains poorly researched and weakly evidenced. This review has been informed mainly by programme or context-specific research studies and programme evaluations. There is a lack of meta-analysis studies or longitudinal research. This means there is not sufficient evidence to provide conclusive responses to the core questions that drive similar investigations into the value of ESD as a field of research and practice. These issues confront the Phase II monitoring and evaluation report as it attempts to provide robust and meaningful evidence of the impact of the DESD initiative as a whole. As the DESD continues, it is to be hoped that there will be many opportunities to address these challenges.

This document draws from Tilbury (2010) 'Assessing ESD Experiences during the DESD: An expert review of processes and learning for ESD' commissioned by UNESCO Paris

The Austrian Sustainability Award for Universities

Anna Streissler, FORUM Umweltbildung, Austria

The Austrian Sustainability Award for Universities is an integral part of the Austrian Strategy for Education for Sustainable Development and specifically puts sustainability on the agenda of all Austrian universities. The award helps to make sustainability not only part of the mission statement but, more importantly, of everyday university life. It adds visibility to existing projects by ambitious and committed pioneers, and it fosters internal networking and coordination of these projects by the university as a whole, thus embedding sustainability more strongly in the overall university culture. It encourages systematic exchange of good practice between institutions of higher education and makes them aware that sustainability is a core dimension of university development all over the world.

History and background of the award

The award is a joint initiative of the Federal Ministry of Agriculture, Forestry, Environment and Water Management and the Federal Ministry of Science and Research and was established in 2007 as a means of promoting and increasing awareness for sustainability processes within Austrian universities. After an initial phase of networking and communication with the relevant stakeholders, the project now supports pioneers in this field by organizing the nationwide award to encourage higher education institutions to practise sustainable higher education.

For Austria, the innovation was to link a publicity-related approach with an internal learning process and benchmarking. The award was also the first approach to link different (and separate) sustainability initiatives among different universities.

Until 2007, many university initiatives for sustainable development were isolated and did not get the necessary support from their administrations. Inviting the whole university (from the vice-chancellor and pro-vice-chancellors downwards) to take part in the award competition led to 42 applications by 13 universities. Two years later, 17 universities submitted projects. The number of submissions stayed roughly the same (45), due to much more internal coordination within the universities.

Characteristics of the award

The award exhibits a whole-institution approach. Thus, it is addressed to a large target group consisting of students, teachers, staff, administration and regional stakeholders. University-wide sustainability is understood as a process of participatory and reflective learning, characterized by several alternative routes.

It does not target individual or one-time projects, but instead recognizes long-term processes and improvements that mirror the internal learning and formation processes of the institution as a whole, concerning eight very different aspects of university organization. A project in each of the eight categories receives an Austrian Sustainability Award.

The categories are:

- Administration and Management
- Curriculum and Instruction
- Research
- Structural Implementation
- Communication and Decision-making
- Student Initiatives
- Regional Integration
- International Integration.

For each of these categories, a series of guiding questions was developed to help applicants locate their initiatives within these different aspects. Participation, learning and innovation are required to be at the very heart of these initiatives.

An interdisciplinary jury of sustainability experts (from science and research, business, culture and media) decides on the winner in each of the eight categories. The first award ceremony took place in March 2008 and the second in March 2010. The award is coordinated by FORUM Umweltbildung, an agency specialising in education for sustainable development (ESD).

Eight examples of good practice in Austrian universities (2008-2010)

Administration and Management: mentoring programme for women at the University of Vienna (2010)

The Center for Gender Equality of the University of Vienna developed the mentoring programme in order to advance the scientific careers of women. Female junior scientists can apply to participate in the 18-month programme. Groups of four women are mentored by one scientist to get strategic knowledge and build networks. The interdisciplinary groups are also offered seminars on key competences. Another aim of the project is to critically examine traditional mentoring relationships and gendered hierarchies within the university with the goal of reforming them. One of the next steps is to disseminate the findings of the project in an international context.

Curriculum and Instruction: International Joint Masters Programme in Sustainable Development (2008)
In this Joint Masters programme, sustainability issues are approached from an inter-disciplinary perspective and address the needs and possibilities of societal transformation. It combines the strengths and specializations in teaching and research of six partner universities (Universität Graz, Austria; University of Utrecht, Netherlands; Ca´ Foscari University Venice, Italy; University of Leipzig, Germany; Basel University, Switzerland; and Hiroshima University, Japan). The Masters Programme is recognized in the countries of the consortium partners and students have the possibility of going on to PhD studies in all partner countries. The Joint Programme also increases participants' employability in the private, public and semi-public sectors.

Research: Euroleague for Life Sciences (2010)
The Euroleague for Life Sciences (ELLS) is a network of leading universities cooperating in the fields of natural resource management, agricultural and forestry sciences, life sciences, veterinary sciences, food sciences and environmental sciences. Its main goal is to conduct research on food security as a means of alleviating poverty. ELLS offers International masters programmes, summer schools/intensive programmes, student exchange, grants and awards, international networking and joint teaching and lecturer mobility. The network is currently led by the University of Natural Resources and Life Sciences, Vienna.

Structural Implementation: innovative mobility concept of the University of Innsbruck (2010)
When the staff of the University of Innsbruck asked for more parking spaces, the pro-vice-chancellor for infrastructure reacted by designing an innovative mobility concept, consisting of a combination of public transport tickets heavily subsidized by the municipality, bicycle stands, bicycle lanes and an electronic car parking system. This offer was accepted by 400 members of the staff and thus a valuable green area surrounding the University could be saved.

Communication and Decision Making: Joint Lecture Series of the four universities in Graz (2010)
Lecturers from the four universities in Graz (Technical University, University of Graz, Medical University and University for Music and Performing Arts) dealt with sustainable development from technical, medical, musical, ethical and climatological perspectives. In the final lecture, the vice-chancellors of the four universities held a panel discussion on the overarching topic of sustainability. The aim of this lecture series was to allow students and staff to learn about the sustainability-related research activities of the four universities, to trigger discussions with each other and to cross disciplinary and university boundaries. This lecture series was the first of a number of joint initiatives between the four universities, called 'Sustainability4U'.

Student Initiatives: the study programme 'Health Management in Tourism' of the University of Applied Sciences Joanneum, Styria (2010)
This two-year programme teaches change management competences, a critical approach towards material consumption, and a work-life balance in which body, mind and soul stay healthy. Students had the task of preparing the university to qualify for the Austrian Eco-Label. They decided upon their own goals, such as saving energy and material resources, substituting conventional products with organic and/or fair trade ones, and making their university a role model in the region, including cooperation with schools and their pupils. They developed a mission statement for the university, integrating sustainable development, and designed an education concept for the primary and secondary schools in the region. At the schools they performed a play on the carbon footprint, initiated a competition for the pupils and arranged a final 'Festival of the Future' to honour the winners.

Regional Integration: RCE Graz-Styria (2010)
The Regional Centre of Expertise on Education for Sustainable Development (RCE) Graz-Styria has been located at the Faculty of Environmental and Regional Sciences and Education of the University of Graz since 2009. It serves as a contact point between university and society, sharing information and experiences and promoting dialogue among regional and local stakeholders. The RCE Graz-Styria is part of an international network, Global Learning Space for Sustainable Development (GLS), which includes over 70 RCEs worldwide and is coordinated by the United Nations University (UNU).

European Integration: Salzburg Centre of European Union Studies (2008)
The Salzburg Centre of European Union Studies (SCEUS)/Jean Monnet Centre of Excellence, founded in 2007, is a research, graduate and postgraduate teaching centre of the University of Salzburg, specializing in studies of the European integration process, particularly in the social sciences, law and contemporary history. The research programme of SCEUS is organised in four disciplinary clusters. Currently it is focusing on research on the European Social Model within a three-year programme. In addition, SCEUS provides a two-year multidisciplinary MA course in European Union Studies as well as a Doctoral School.

The future of the Austrian Sustainability Award for Universities
These examples show that sustainability has become an important topic in many Austrian universities and can be implemented in a wide variety of ways. The award will be organized again in 2012 and 2014 with the hope of further increasing awareness of the need for sustainability in Austrian higher education. Alternating with the award, a more systematic networking of sustainability pioneers is envisaged to increase communication about sustainability and the exchange of good practice models within Austrian universities and beyond.

Contributing to sustainable development

Suzanne Benn and Jessica North, The Australian Research Institute in Education for Sustainability

Education has always been vital to equipping people for change. Over countless generations we have learned to find food, to build shelter, to use tools and to express our creativity in myriad ways. Indeed, our education has been so successful that now we need to learn something new: how to meet the needs of the present without compromising the ability of future generations to meet their own needs.[1]

The Ahmedabad Declaration[2] states: "We must reconsider our tools, methods and approaches, our politics and economics, our relationships and partnerships, and the very foundations and purpose of education and how it relates to the lives we lead." To address this challenge, our entire education system needs to have at its core the sustainability principles of both intergenerational and intragenerational equity. In addition, the skills associated with change for sustainability, such as envisioning a better future, critical and systems thinking, participation and collaboration also need to be mainstreamed. These skills are helpful in the following ways:

- **Envisioning a better future** creates a mental and emotional link between our immediate actions and our long-term goals
- **Critical thinking** challenges us to question the symptoms of unsustainable practice

Image: Katy Tomkins

Students are encouraged to develop their understanding of ESD

- **Systems thinking** allows us to appreciate that the whole is greater than the sum of its parts and provides a way of understanding complex situations
- **Participation** involves us in joint analysis and planning, and puts the decision-making and responsibility for outcomes in the hands of the participants
- **Participation and collaboration** help to build a shared vision amongst a diverse range of stakeholders, and to strengthen ownership and commitment to action.

"We need a shared commitment to education that empowers people for change. Such education should be of a quality that provides the values, knowledge, skills and competencies for sustainable living and participation in society." *The Bonn Declaration*[3]

As a contribution to the United Nations Decade of Education for Sustainable Development (DESD), the Australian Government produced a National Action Plan for Education for Sustainability,[4] a key theme of which is to foster sustainability across community, business and government, as well as across the traditional education system. The Australian Research Institute in Education for Sustainability (ARIES)[5] has been implementing the following innovative ideas to foster and support education for sustainable development across this range of sectors in Australia.

Teaching teachers

Supported by national and state education policies and professional development programmes such as the Australian Sustainable Schools Initiative,[6] Australia is taking a whole-of-school, system-wide approach to embed sustainability in educational policies, programmes, procedures and systems. As part of this approach, ARIES has focused on that most fundamental education: the teaching of teachers. Through the mainstreaming of education for sustainable development (ESD) in pre-service teacher education, future teachers are enabled to provide their future students with the knowledge and skills to respond to the complex sustainability issues they will encounter throughout their lives.

In Stage 1 of this programme,[7] effective models of change were compared. A whole-systems approach combined with action research was identified as the approach most likely to deliver the required levels of change. In Stage 2 the model was piloted and key agents of change within the education system were

identified.[8] These agents of change, located in five teacher education institutions in Queensland, undertook action research to mainstream ESD within their particular system. By doing so, each participating group increased its capacity to bring about change. Other outcomes of this project included the development of departmental policies, student involvement in education for sustainable development forums, and enhanced skills amongst their fellow teacher educators. The Stage 3 project[9] built upon Stages 1 and 2 to implement the mainstreaming of education for sustainable development in teacher education in New South Wales and the Australian Capital Territory.

Drawing on this research, ARIES suggests the following five enabling actions for mainstreaming education for sustainability in pre-service teacher education:

- **Collaborate** and create partnerships with curriculum developers, policymakers and teacher accreditation bodies
- **Develop an ethos of sustainable practice** — it is important to 'walk the talk' at all levels of the system, from classroom to national policy
- **Connect existing sustainability content** — drawing it together can increase its influence
- **Create time and opportunitie**s — people need time to have new conversations and collaborate if they are to embed ESD into their policies
- **Provide experiential learning** to encourage students to focus on ESD and to develop their own personal understanding of its relevance.

Sustainability education in business schools

A key theme of the National Action Plan is to foster sustainability in business and industry. Through partnerships, the intention is to build capacity to plan, adopt appropriate frameworks and tools, and harness incentives to make changes for sustainability.

Image: ARIES

ARIES has focused on pre-service teacher education

To take ESD into the business sector, ARIES created and facilitated change towards sustainability in the learning and teaching focus of five Australian business schools aand operations and their partner corporations. The specific focus of the research was the MBA programme within the participating business schools.

The ARIES programme[10] brought together sustainability champions from business schools in partnership with corporations across Australia in a collaborative process of learning-based change to develop their understanding of sustainability and accelerate change to achieve tangible sustainability outcomes.

Business schools, in collaboration with the partner corporations, mainstreamed subject content about sustainability and experiential learning processes into their core and elective courses. Some even introduced new degree programmes in sustainability. They also created opportunities for their students to undertake practical sustainability projects with their corporate partners.

As a result of this project, specialist courses on sustainability were revised or introduced; there were higher levels of engagement between the corporate partners and their employees and the wider community; corporate partners reviewed their leadership, corporate social responsibility and supply chains; there was an increased understanding of the learning benefits of linking operational practice in sustainability to teaching content; and networks that supported sustainability-related curriculum development were formed.

Accounting for sustainability

The business world is under growing pressure to institute various forms of corporate sustainability. Government, employees, investors, customers and the general public are now demanding more responsible and transparent corporate behaviour. Accountancy is regarded as one of the professions with the most immediate impact on sustainability, through its links with a wide range of industries and economic activities. In Australia, as in other countries, there are now moves to integrate sustainability into the range of advisory, regulatory, reporting and financial services that accountants provide, both in-house and externally.

ARIES is working with the professional accountancy associations, accountancy schools in universities, key government departments, leading accountancy firms and other stakeholders to foster change towards sustainability in this profession.

During this project,[11] ARIES created new avenues for dialogue by facilitating an inaugural roundtable meeting which brought together representatives of the accounting profession, government, business, industry, the finance sector, professional groups and universities. This roundtable exchange clearly illustrated the need for universities and the national professional associations to engage in a more productive level of dialogue with regard to embedding key skills for sustainability in accounting education and professional development. In

this forum, the accounting profession's clients — business and industry — expressed their need for accountancy graduates with skills such as communication, teamwork and problem-solving, which they argue are necessary for accountancy professionals to engage with the changing modern economic environment. High levels of flexibility and creativity are increasingly required from accountancy graduates if they are to contribute to the contemporary workplace.

As an outcome of this project, ARIES has recommended that sustainability principles become incorporated as part of a broader strategy for improving such skills, while exposing students to the challenges of, for example, evaluating assets and services in a manner that takes account of resource usage, life-cycle analysis and polluter-pays principles, and assesses the risks to business associated with climate change. It has emerged that one way of influencing such change in accounting education would be to integrate sustainability into the accreditation requirements placed by the professional accountancy associations upon accounting undergraduate and postgraduate teaching programmes. ARIES has also conducted a baseline survey to identify the range of sustainability-related topics currently taught in Australian accounting schools.

As a further outcome of this project, in collaboration with the Business Higher Education Roundtable and the Macquarie University School of Accounting, ARIES is presenting an inaugural summit to explore the advancement of accountancy towards the integration of sustainability performance measurement. The first day of this summit will address such issues as: drivers to include sustainability throughout the industry; learnings from the global market; and employability and multi-disciplinary skills in an increasingly sustainability-focused industry. The second day will consist of master classes in: teaching sustainability; sustainability auditing and assurance; water accounting; and modelling the financial risks attached to carbon and sustainability. With contributions from the Global Reporting Initiative, CPA Australia, the Institute of Chartered Accountants Australia, international accounting firms and Australian universities, this summit will facilitate the accounting profession's progress along the path of sustainable development.

As many other professions would benefit from a similar approach, ARIES is now developing its Sustainability in the Key Professions Roundtable model to drive the uptake of sustainability skills in other professions such as engineering and law.

Image: Jenny Tomkins and DEWHA

Knowledge of nature and ecology is a key factor in ESD

Reaching more students

To reach a wider range of students, ARIES is currently developing a teaching unit on Energy Efficiency and Renewable Energy as part of the Australian Government's Skills for the Carbon Challenge initiative.[12] The ARIES unit is designed to be inserted at the Diploma or Graduate Diploma level across university education and vocational education and training, and its modular construction will also allow teachers to utilize its material within existing courses.

Education leading the way

Through awareness and knowledge, and by building the capacity to innovate and implement solutions, ESD helps to re-focus the way we live and work in the move towards a more sustainable society.

"Through education and lifelong learning we can achieve lifestyles based on economic and social justice, food security, ecological integrity, sustainable livelihoods, respect for all life forms and strong values that foster social cohesion, democracy and collective action." *The Bonn Declaration*[13]

With support from the Australian Government Departments of Environment, Water, Heritage and the Arts,[14] and Education, Employment and Workplace Relations,[15] as well as NSW Government Departments such as Environment, Climate Change and Water, ARIES has been able to inform and encourage the adoption of education for sustainability in Australia. Our research not only informs government policy, but has also provided international leadership to shift policies and practices across the Australian business, education and community sectors so that we might meet the needs of the present without compromising the needs of future generations.

Turning today's youth into tomorrow's leaders in ICT for development

Dr. Hyeun-Suk Rhee, Director, United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development

Among the critical elements necessary to achieving sustainable development is the building and strengthening of institutions capable of delivering services that strive towards the goals of development. A critical part of this process is education and human capacity-building, which can equip present and future leaders with the necessary skills and knowledge they need to achieve development goals.

The new technologies of communication — from individualized computer-assisted learning systems to the more sophisticated Internet-based technologies of today — offer an unparalleled opportunity to reconsider conventional practices and institutions and accelerate the pace of socio-economic advancement. The role of information and communication technologies (ICTs) as a critical element in broad-based and equitable human development has long been widely accepted. However, the degree to which countries use ICTs to achieve their development goals depends not only on the provision of ICT infrastructure, hardware and software but, just as importantly, on the education of people to effectively use these technologies. Many developing countries lack the necessary human resources to leverage the opportunities presented by ICTs, thereby lagging behind in fully participating in a digital and networked global economy. In order for these countries to leapfrog ahead, it is vital to ensure that the knowledge and skills of future generations align with the needs of the information society. As explicitly noted by the *World Youth Report 2005* in the context of the World Programme of Action for Youth,[1] globalization and the technological revolution require new responses to the educational needs of youth and therefore, urgent attention is needed to prevent the digital divide between developed and developing countries from widening in the next generation.[2] This is especially relevant in the Asia-Pacific region, which is home to more than half of the world's youth population.

Image: UN-APCICT/ESCAP

APCICT's Future ICT Leaders Programme aims to create a cadre of next generation leaders equipped with the capacity to use ICTs for achieving development goals

As the youth of today go on to occupy leadership positions in society in the coming years and decades, and assume the roles of policymakers and key decision-makers in academic, private sector and civil society institutions, their ability to recognize and leverage the link between ICTs and developmental goals will prove crucial. From this perspective, creating a critical mass of future leaders and decision makers who have a keen understanding of the potential of ICTs for socio-economic development (and the essential skills to tap the opportunities presented by ICTs) should be viewed as a pressing requirement in the Asia-Pacific region today.

Responding to a call for action

The Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT/ESCAP),[3] a subsidiary body of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), has been implementing the Future ICT Leaders Programme to create a cadre of next-generation leaders equipped with the capacity to use ICTs for achieving development goals. Currently the programme consists of two main components: provision of practical exposure to the ICT for development (ICTD) field and enhancement of ICTD education in universities, integrated with and supported by other programmes of APCICT.

The United Nations established APCICT on 16 June 2006 in Incheon, Republic of Korea in response to the Plan of Action of the World Summit on the Information Society (WSIS), which called for international and regional cooperation to enhance the capacity of leaders and personnel in developing countries. The role and mission of the Centre is to strengthen the efforts of the 62 ESCAP member and associate member countries in the Asia-Pacific region to use ICTs in their socio-economic development through building the human

and institutional capacity for ICT. Three interrelated pillars form the structure of APCICT's approach to capacity-building in ICTD: training, research and knowledge management, and advisory services. Together they form an integrated approach and each pillar complements and reinforces the impact of the other pillars.

Training

Since its inception, APCICT has conducted 50 conferences, workshops and courses. Over 4,900 participants from more than 90 different countries and territories have enrolled in these courses and in the APCICT Virtual Academy (AVA)[4] — an online distance learning platform of APCICT. The participants of the workshops and other events are primarily high- and mid-level government officials and other development professionals. Over 80 per cent of APCICT training workshop participants surveyed to date have expressed satisfaction with the training content.

A core activity of APCICT is the Academy of ICT Essentials for Government Leaders (Academy). This is APCICT's flagship programme and it includes a comprehensive ICTD curriculum, comprising eight modules with two more underway, with more than 20 partners working with APCICT to roll out the Academy at the national level. The Academy modules are available in four languages: English, Bahasa Indonesia, Russian and Vietnamese. Translation of the modules into seven other languages (Dari, Pashto, French, Khmer, Mongolian, Myanmar and Tajik) is underway. APCICT also periodically updates the content of the existing modules.

Research and knowledge sharing

Research and knowledge sharing are fundamental to APCICT's efforts in guiding technical support provided to government organizations and training institutions, and to ensuring the relevance of the Academy. APCICT has published eight Academy modules and 22 other knowledge products, including analytical studies, handbooks, technical papers, information kits and journal issues related to ICTD and ICT human capacity-building.

Advisory

APCICT actively offers advisory services to national governments and training partners of the Academy in localizing and delivering the training modules, and promoting the institutionalization of this training in national capacity-building frameworks to maximize reach to relevant policymakers. In addition, the Centre has been providing guidelines and advice to a number of national and regional partners on course design, customizing content development, instructional design and teaching methodology to suit each country's unique environment.

ICTD coverage at university level

A recent study has identified eight groups of ICT human resources needed to build an information society: specialists, advanced users, basic users, enabling managers, ICT-equipped educators, thought leaders (researchers, consultants and professors), policymakers and infrastructure builders.[5] The study emphasizes the multi-faceted nature of human resource development required to bridge the digital divide. This research implies a need for interdisciplinary education between technology and development studies at the university level in order to produce youth leaders who possess sound knowledge of ICTD. This finding is further supported by a recommendation from ICTD expert Richard Heeks, who argues that "we need to develop or find ICTD champions who are 'tribrids': they must understand enough about the three domains of computer science, information systems and development studies to draw key lessons and interact with and manage domain professionals".[6]

Results of APCICT's preliminary desk research into the courses offered in university majors related to ICT or socio-economic development are discouraging. They show that:

- There is very little interdisciplinary effort between majors related to ICT and those related to development
- Very rarely is there an opportunity for students to study the concept of ICTD in the majors that are best positioned to groom them to become future ICT leaders.

This means that students are often unaware of the potential uses and benefits of ICTs in the development of their countries when they graduate.

The first three years of APCICT's experience in engaging with university students has also provided first-hand insights into their capacity-building needs and has confirmed that the above gap exists. Since 2007, the Centre has been offering three-month internships to international graduate students, providing practical exposure to work in the ICTD field. APCICT has additionally partnered with the Ministry of Foreign Affairs and Trade of the Government of the Republic of Korea, ASEAN University Network and Daejeon University to offer work exposure opportunities to exchange students from ASEAN countries. A majority of these students are from either computer science or social science/development studies-related majors. The students had an opportunity to be engaged in a wide spectrum of APCICT's programmes, ranging from online and face-to-face ICTD training workshops and conferences to assisting APCICT in research and knowledge management activities. Feedback from APCICT's interns and ASEAN students attests that their newly acquired understanding of the possible use and potential of ICTs in contributing to socio-economic development has not only shaped their own career visions but also renewed their sense of commitment for the socio-economic development of their countries:

"Before, I was just a normal software engineering student who thought about strengthening my skills developing software. After working with UN-APCICT, I realized that I should also think about development, which means using my knowledge of ICT to help my country," says Hasrul Reeza bin Mustaffa, ASEAN student, senior in Computer Science at Universiti Malaysia Pahang, Malaysia.

Strengthening ICTD education in institutions of higher learning

As the next step in expanding the Future ICT Leaders Programme, APCICT has initiated a project to further support ICTD awareness and capacity-building of university students in the Asia-Pacific region. Project development

and implementation is based on an inclusive and participatory approach to optimize the chance of success and to enlist the commitment of stakeholders in sustaining, replicating and scaling up the initiative. APCICT also seeks to form collaborative partnerships with universities in the Asia-Pacific region, academic networks, professors and education policy leaders and officials who recognize the need for interdisciplinary education to equip future leaders with knowledge of ICTD.

Based on a review of existing coverage of ICTD in programmes and majors that are related to either ICTs or socio-economic development in universities in the region, a new ICTD learning module for university students will be developed to help bridge the knowledge gap between ICTs and how they can be used to achieve development goals. Leading universities in selected countries of the region have been identified for initial research. Data gathering has taken place in 91 universities in eight countries, which include Brunei, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Thailand and Viet Nam, as part of the first stage of a region-wide effort to collect information on current ICTD coverage in university curricula and programmes.

In addition to scanning university curricula for ICTD coverage, individual professors, university administrators and government officials were asked to complete a survey on ICTD education in their countries. Results from these countries show that, while there are a number of courses and programmes that focus on or touch upon ICTs or socio-economic development, specific coverage of ICTD itself is very limited. This is true for technical programmes such as computer science or electrical engineering as well as those related to development, such as international relations, social sciences and public administration.

Once research data from across the Asia-Pacific region has been collected and analysed, the results will feed into development of the ICTD learning module for university students. Through advocacy to policymakers and decision makers and via partnerships with national educational agencies and institutions, this project will seek to promote the addition of relevant ICTD topics to existing university programme curricula while concurrently offering the actual content of the topics in the form of the ICTD learning module. For customizing content to fit the particular needs of university students, this project will draw upon and reinforce other APCICT initiatives in accordance with the Centre's integrated approach.

Integrated approach with other APCICT programmes

APCICT's flagship Academy training programme with its comprehensive ICTD curriculum[7] and an expanding network of partners has been playing a key role in highlighting the importance of ICT capacity-building. The eight stand-alone but closely interlinked modules of the Academy curriculum were developed to provide a holistic approach to ICTD. The Academy's principal target group has been policymakers in national governments of Member States, including ICT ministries/departments/agencies as well as those of other sectors. Target groups of the Centre have also included local government organizations, non-governmental organizations, training institutions, research entities, UN agencies, donor organizations and private companies.

The Academy programme has already been launched in 17 countries of the Asia-Pacific region, including many Countries with Special Needs,[8] attesting to the quality and relevance of the programme. Afghanistan, Indonesia, Mongolia and the Philippines have adopted the programme in their national capacity-building frameworks, thus ensuring delivery of long-term benefits and sustainability.

APCICT's experience with the Academy programme has highlighted the need to similarly build the ICT capacity of students and youth, especially in developing countries. The Academy partners have expanded the utilization of the Academy curricula beyond government leaders and policymakers. In Kyrgyzstan, Mongolia and Indonesia, the Academy programme has been introduced in classrooms for undergraduate and graduate courses such as computer science and pubic administration. The feedback gathered to date from the students and resource staff of these pilot cases has confirmed the need to introduce ICTD education in universities and has underlined the applicability of the Academy programme in such efforts.

The project on enhancing ICTD coverage in universities will also encourage distance learning and knowledge sharing through the AVA, the online, distance-learning version of the Academy, which currently offers the eight ICTD training modules of the Academy programme in the form of video and audio lectures and slide presentations. Furthermore, for advocacy and outreach, the project will utilize the e-Collaborative Hub,[9] APCICT's online knowledge sharing platform, which enjoys global membership and offers discussion forums and information resources on a range of topics relevant to ICTD. Participating universities will be able to make use of the e-Collaborative Hub to find relevant resources and experts on different topics of ICTD, and as a platform to engage in discussions and collaborate regionally and internationally on developing innovative solutions using ICTs.

Engaging the next generation

Young people constitute the task force of the future. Sensitizing the next generation on how ICTs can be used for socio-economic development is an important step towards engaging youth and increasing their level of commitment to, and participation in, sustainable development.

The Declaration of Principles and Plan of Action of WSIS states: "Each person should have the opportunity to acquire the necessary skills and knowledge in order to understand, participate actively in, and benefit fully from, the information society and the knowledge economy." The WSIS document also calls for capacity-building to ensure that, among other groups, young people are equipped with the knowledge and skills to use ICTs, including the capacity to analyse and treat information in creative and innovative ways, share their expertise and participate fully in the information society.

By helping equip the future workforce of developing countries with the requisite knowledge and awareness to leverage the potential of ICTs for furthering socio-economic development, this project, along with other APCICT initiatives, works towards creating a more prosperous and equitable world. As a champion of the vast potential of ICTD and its relevance to the core values of education for sustainable development, APCICT seeks to promote human capacity-building that translates into concrete actions towards a people-centred, development-oriented and inclusive information society.

Transformative learning

Moacir Gadotti, Director, Paulo Freire Institute, Brazil

Over the last few decades in particular, humankind has developed at an extraordinary pace. Undoubtedly a successful species in the fields of production and technology, humans have followed a path of accelerated economic growth that has had a direct effect on the way we live. Unfortunately though, this way of life we have created for ourselves is also having a directly negative impact on the Earth's ability to support us.

Human activity, and the impacts that our societies have had on the Earth as a whole, has changed since the beginning of the Industrial Revolution.[1] The variables include Northern hemisphere average surface, population, CO_2 concentration, gross domestic profit, loss of tropical rainforest and woodland, species extinctions, motor vehicles, water use, paper consumption, fisheries exploitation, ozone depletion and foreign investment — all of which have skyrocketed in the last 50 years.

Because of the huge impact human activity has had, and continues to have, on our planet, we are in a position where we need to find a more sustainable way of living. Some preach that while our economy continues to be built on the assumption of growth, sustainability initiatives we adopt now are futile. While we cannot realistically look to slow economic growth, there is a strong case for developing a more sustainable economic model that allows for growth while taking key environmental considerations into account. Today, we cannot just continue to keep developing regardless. It is important to grow with justice and respect for the environment.

So, what role do education and learning have in helping to achieve this? If one accepts that the transformation of society and the transformation of people are connected processes, then ultimately, education and learning are fundamental to the creation of a more sustainable future.

Modern education systems were born in Europe in the 19th century at the height of industrial development and, despite the real diversity between nations that adopted them later, these systems are generally very similar. In the 20th century, education systems were further strengthened by the expansion of the right to education, enshrined in the 1947 Universal Declaration of Human Rights. Despite this and the emergence of international programmes for evaluating school performance, and the Programme for International Student Assessment (PISA), we begin the 21st century questioning our capacity to promote peace, understanding and sustainability. Education is part of the problem and part of the solution. We need to redefine it and we need to promote transformative learning.

Essentially, the UN Decade of Education For Sustainable Development (DESD) seeks to integrate the principles, values and practices of sustainable development in all aspects of education and learning to meet the needs of the present without compromising those of future generations. This initiative is, above all, a call for transformative action and education to address planetary citizenship, and to create a culture of peace and sustainability that promotes the end of poverty and illiteracy in the world. It also aims to promote education for emancipation: learning to live sustainably, gender equality, human rights, education for all, health, human security and intercultural dialogue.

If we think in these terms, we can consider education for sustainable development (ESD) as a great opportunity to renew formal educational curricula and align learning with environmental awareness. Mathematics could involve working with data that refers to the pollution of the environment or poverty growth; linguistics could analyse the role played by mass communication and publicity in consumption habits; and history and social sciences could discuss ethnic issues and gender inequality.

Regarding the impact of the concept of sustainability on formal education, we need to consider two levels. One, the legal level: educational reforms (curriculum, contents). New behaviours can be encouraged by the law. And two, the level of commitment in society in general, especially among the youth. In order to engage with young people and gain their compliance in living sustainably, they need to be not just taught, but motivated to think more compassionately. After all, changing someone's way of life is not an entirely mechanical process.

On a policy level, governments need to establish links between ESD and education for all; recognizing that the purpose of education is not just to support economic development, but to help individuals and societies meet their full potential without undermining the health of society and the environment at large. But at the grassroots level — schools — much can and must be done by school leaders, teachers and students to integrate sustainability into all aspects of school life and the curriculum, drawing out the interconnections between social, environmental, cultural and economic problems and achievements. School-level initiatives can respond best to the contexts, opportunities and needs of particular communities and the natural environment.

In order for educational programmes to achieve this, sustainability needs to underline all principles, values and attitudes taught. This requires the estab-

Image: Paulo Freire Institute

Seeds Groups: exercising citizenship from childhood

lishment of a concrete strategy so that we can start this debate inside our schools to build an eco-audit in order to discover where exactly we are being unsustainable. It is very simple: all we need to do is trace everything we do and compare this data to the principles of sustainability. It is not hard to identify where we are and where we are not integrating these principles in our curriculum — in history, in social sciences and in our daily lives.

In terms of the level of teaching and learning, we have to adopt different strategies. In primary schools, for example, our children need to experience the effects of sustainability first hand — they need to know plants' and animals' needs and habitats; how to reduce, reuse and recycle materials that have been used. On a more advanced level, we can discuss biodiversity, environmental conservation, energy alternatives and global warming. At university level, besides diffusing environmental information, we can disseminate new information and conduct related research.

ESD should have a school approach, like the Eco-School and ideally, Sustainable School practices that have been developed in many countries. Apart from building environmental awareness and positive environmental attitudes and values, ESD also needs to be reflected across school life: not just in the classroom but outside of it too. We cannot teach students about energy conservation in their science classes, if the schools are not doing anything to reduce energy consumption themselves. Environmental awareness is necessary, but it is not enough. We must set a good example ourselves.

A curriculum that promotes ESD must continuously be reviewed to address new environmental, social and economic issues, and determine how they can be tackled at a local level and more broadly. Issues like climate change, sustainable consumption, human rights, living values and food security also need to be integrated in formal curricula as well as in non-formal settings. Schools need to identify local issues and find out how they can be dealt with through school-based programmes. The entire community needs to be involved to make initiatives like this work — not only students and teaching staff, but also school managers, non-teaching staff, and local organizations and community groups that work with the school. Perhaps most important of all, ESD needs the support of local authorities, especially Ministries of Education, to ensure that programmes will then be incorporated into the formal educational system.

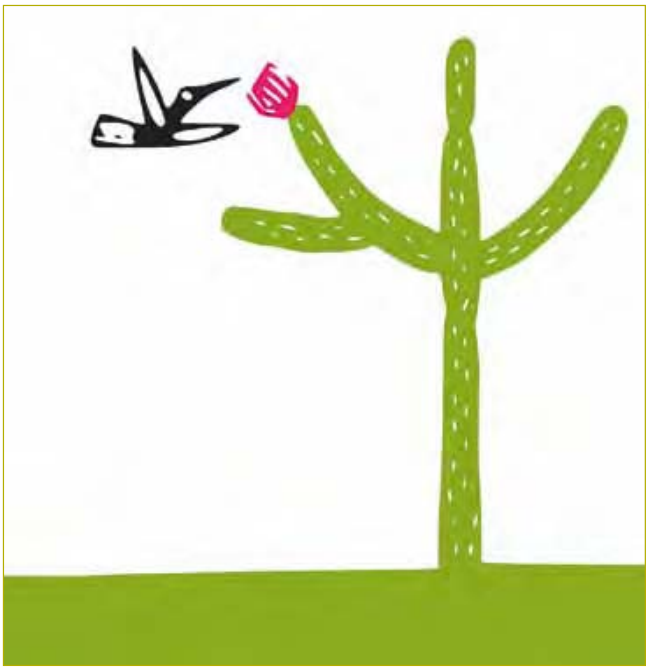


Image: Paulo Freire Institute

The hummingbird feeds on the nectar collected delicately from the flowers, without harming the plant, in a sustainable way. The mandacaru (Cereus jamacaru), a tree that is the symbol of the Northeastern Brazilian backcountry, sprouts only when it is going to rain. It is a signal of life on the drying land

A new educational practice requires a new pedagogy. That is why in recent years we have insisted on the need for an ecopedagogy, one that is based on sustainability. Ecopedagogy overcomes the anthropocentrism of traditional pedagogies and establishes a symbiosis between human beings and nature as an underlying assumption. The Earth comes to be regarded as a living being, as Gaia. Hence it would be better to refer to an Earth pedagogy.

What strategies, therefore, are needed to reform current formal education curricula?

One of the greatest challenges we have when it comes to transforming educational practices and embracing sustainability is to overcome the naturalistic regard we have towards the environment and to embrace a systemic and holistic view, which contains multiple, undetermined and interdependent causalities to conceive a learning environment of sustainable management beyond the promotion of isolated actions (reducing, reusing, recycling). Without nourishing a dialogue in the community, it is impractical to develop a curriculum of clean technologies. We must integrate the local economy with energy efficiency initiatives, human interaction and the environment at large to achieve sustainable consumption, and develop green technologies, renewable resources, responsible consumption, human rights, shared principles, power relations and ecological interactions. These elements can then be gathered together to create systematized knowledge and form new living habits.

One cannot talk about sustainability without talking about education for sustainable consumption. The current economic model in the developed world cannot be extended everywhere, otherwise we would need one more planet — or even up to six planets — to be able to feed and sustain everyone. What is needed is a new model — a more sustainable one — which can protect the environment and people's health.

The idea of sustainability, broadly understood, encompasses a whole new project of civilization. Applied to pedagogy, it can have implications in all fields of education, not only in environmental education. At the Paulo Freire Institute, we consider the concept of sustainability as an interdisciplinary component in all our projects of teaching and learning. In order to achieve this, we have developed a concept and vision of an ecopedagogy, initially called Pedagogy of Sustainable Development, as an appropriate pedagogy for environmental education and transformative learning. We believe that sustainability is the dream of living well — a dynamic balance between humans sustaining themselves and humans looking after the environment.

These new transformative learning practices based on sustainability are spreading around the world. One particularly good practice gaining adoption is the Seeds of Spring Project. It was developed by the Paulo Freire Institute in the municipality of Osasco, Brazil. Started in 2006, this project is based on the principles and values of sustainability. It promotes active involvement of children and young persons in exercising citizenship from childhood. Groups of children (Seeds Groups) chosen by their peers are organized to discuss, propose and commit themselves to suggestions and actions related to the Eco-Political-Pedagogical Project (EPPP) in schools from the standpoint of sustainability. In weekly meetings, they participate in practical activities that involve exercises of 'reading the world' (Paulo Freire), which aim to establish the vision children have of their school, neighbourhood, city, life in common, health, leisure, sports, culture and other matters significant to their situation in each school. Children and teenagers are guided towards identifying unsustainable practices and finding solutions, as they seek the improvement they desire for the school, neighbourhood and city. They become committed to their proposals for change, and also to becoming part of what they wish to see achieved.

In summary, I think that sustainability is a powerful concept for transformative learning. It is an opportunity for education to revolutionize old systems based on competitive principles and values, and to introduce a culture of sustainability and peace in school communities. Sustainability can be a fundamental category for rebuilding current educational systems, which are still based on a predatory view of the world. Environmental education and ESD are fundamental axes to these reforms when they are associated with human rights, gender rights, democratic rights, peace and sustainability. That is why I believe that the concept of sustainability will contribute to the construction of a new quality in education, a social-environmental quality, which will change the paradigm of education that has, ultimately, been destroying the planet since before the 19th century.

Helping people take control of their destiny

Hassan Ahmad and Siti Sayadi, Mercy Relief, Singapore

Education policymakers and implementers often promise that education will bring about a better future for those who embrace it. Yet in a Sumatran province, more than 100,000 university graduates are unemployed. What are the effects on these unemployed graduates who have invested time, money and hope in pursuit of that better future?

Education initiatives provide a level of expectancy aimed at capacity-building and sustainability, empowering beneficiaries to transform their environment for a better quality of life. They also provide rural communities with the psychological tools to understand, appreciate and acknowledge other peripheral developmental requirements to change the conditions of their lives. Therefore given that education is both the means and the deliverable to attain sustainable development, it is imperative that humanitarian implementers understand the primary needs and outlook of rural and disaster-affected communities in assessing their ability to appreciate and apply education to their lives.

Mercy Relief adopts an innovative, socially inclusive perspective on education for sustainable development, with a thematic emphasis on capacity-building at the community level, whilst complementing each country's own educational investments and national policies.

Education programmes foster a learning culture in communities, empowering them to make their own choices and decisions for their developmental needs during peacetime and in the aftermath of calamity. As a relief and development organization, Mercy Relief sees education as the catalyst that helps communities to become the uplifting force behind their own destiny. Therefore education programmes are implemented with expansionary and pre-emptive strategies for longer-term development, including disaster risk mitigation philosophies.

Immediate versus longer-term needs

Having served disaster-stricken, impoverished and disadvantaged communities in 19 countries over the last seven years, Mercy Relief have seen that in these communities, immediate, subjective, simple personal needs prevail over longer-term or less urgent communal needs.

Image: Mercy Relief

Sumatra, Indonesia — Unemployed graduates, who have invested their time and money, now bored and frustrated — a potential recipe for social problems

Image: Mercy Relief

Zambales, Philippines — Mangrove planting for coastal rehabilitation and protection leads to enhanced livelihood output for fishermen and coastal communities. Parents can now afford to send their children to school

Sustainability of livelihood opportunities is paramount to any household. Water is crucial to immediate survival and sustainable development in disadvantaged communities. A development project that provides potable water and water for farming is virtually certain of winning over targeted communities. Macro issues such as education, the threat and spread of avian flu and HIV, or environmental degradation, are least proximate to these communities in terms of consciousness.

Mercy Relief's approach to education

With the understanding that longer-term objective comprehensive needs must begin to prevail over immediate, subjective personal requirements in disadvantaged communities' pursuit of development, Mercy Relief has formulated its development programme approach to integrate the five focused areas of water and sanitation, shelter, livelihood, healthcare and education. Education provides the mental challenges, knowledge and skills required by communities to enable them to help themselves out of poverty.

An improved environment in the Philippines

The poverty-stricken province of Zambales in the Philippines lacks economic diversification due to environmental degradation triggered by improper management of natural resources, natural disasters due to climate change, and the limitations of rural development funds. The situation is exacerbated by the scarcity of clean and potable water, coupled with the high costs of medical treatment, which prevent many parents from budgeting for their children's education.

These problems motivated Mercy Relief to engage in a project in the coastal district of Palauig, aimed at triggering a new culture of knowledge-seeking for community development. Public forums were set up to encourage the villagers to explore possible environmental and livelihood-building activities that could enhance the community's living conditions holistically.

Starting with the planting of mangrove seedlings on five hectares of shoreline, this effort aimed to establish natural nurseries for fish to spawn, in turn allowing villagers to increase their catch. In addition, a mangrove nursery was introduced to support the mangrove-planting project and in tandem provide additional income to the community as the seedlings were also sold to government agencies and other NGOs to start mangrove re-plantation at other coastal sites. Two water systems were constructed, managed by local communities, to provide a steady supply of potable water to at least 466 households with 3,262 beneficiaries at Luan and Poblacion. Herbal farming projects were implemented to provide 786 households with alternative remedies to treat basic medical conditions instead of seeking expensive modern treatment in town. With increased income and savings, parents can now set aside a budget for their children's education.

Changed approach, changed impact in Indonesia

Studies conducted by Indonesia's Ministry of National Education showed that most teachers and principals were under-qualified in terms of their teaching techniques, school management and operational effectiveness. These in turn affected the quality and attitude of students graduating from the schools, and there was a high student drop-out rate. This trend persisted despite efforts by the provincial education board to invest funds in rehabilitating and improving school infrastructures

Image: Mercy Relief

Riau Islands, Indonesia — Principals and teachers attend workshops that help them plan and design new methods of delivery and activities to keep education exciting and appealing. Interactive learning and presentations are features of the new model

Image: Mercy Relief

Ho Chi Minh City, Viet Nam — Students go through an unconventional system of language learning which culminates in presentations on foreign cultures, confidently conducted in English, for their foreign benefactors and friends

Image: Mercy Relief

Sihuan, China — Bio-digestors address the sanitation and health issues in Ziyang County. Within six months, more than 224 families experienced the health, economic and environmental benefits of the project

and providing compensation benefits to encourage teachers to teach in remote areas.

Since 2008, Mercy Relief has run a Principals and Teachers Quality Improvement Programme and an Education Quality Improvement Programme (EQUIP) in Indonesia's Riau Islands Province (KEPRI) and South Sumatra Province, in partnership with the Sampoerna Foundation, to increase the capacity of teachers and principals through professional development in leadership and pedagogical skills. A year-long capacity-building programme was put in place to expose the teachers and principals to better practices and the latest trends in teaching, classroom management, leadership skills, curriculum development and Information and Communication Technology (ICT).

The new, intensive exposure resulted in an enhanced confidence level among the teachers, enabling them to provide a creative learning environment for the students, who in turn now enjoy school and appreciate education.

Viet Nam: language that adds gloss

Pressures of globalization have driven Viet Nam to become one of the most economically promising ASEAN countries. Despite growing demand for mastery of the English language in the region, English is still hardly used in conversation at all levels, partly due to the lack of qualified English teachers and the fact that those available have had no formal training to teach English as a second language.

To meet this demand, Mercy Relief launched the English for Everyone (EFE) programme in Ho Chi Minh City. Partnering the WIBI School of Higher Learning, five English language teachers from the University of Finance and Marketing (UFM) were selected and trained in a method of teaching English appropriate to the level of the local capacity. The programme encouraged interactive learning and habitual use of English in everyday communication to enhance students' confidence in using the language. Participating teachers from the national schools were also trained and they acquired an improved method of teaching English.

After seven months of lessons, 50 teachers and over 4,000 students from 14 elementary schools could speak and write basic English confidently. They have showcased their newly-acquired skills by sharing what they have learned at inter-cultural leadership presentations.

Health education and renewable energy in China

People in many rural areas in China struggle to meet basic needs. Fei'e Village of Jian Yang County in Sichuan was chosen for a Mercy Relief eco-sanitation development project that has led to greatly improved living conditions. Previously, the pig-rearing villagers lived with poor sanitation and a high risk of epidemics due to the improper disposal of human and pig excrement in open pits. In addition, villagers suffered poor health due to the use of coal and wood for cooking in unventilated kitchens.

Through the installation of underground anaerobic biogas digestors serving 224 of the poorest households in the village, inhabited largely by the elderly, an efficient waste management system was developed. The excrement, collected via a new piping system from the pig pens and rebuilt toilets, is stored in the digestors and used to harvest enough biogas to fuel biogas cookers and lamps provided for the villagers to serve their household cooking and lighting needs. The residue excrement from the digestors is also used to fertilise crops.

In addition to enjoying better sanitation, the villagers now spend less on buying electricity from the national grid, and are encouraged to abstain from the environmentally unfriendly practices of tree-cutting for firewood and using chemical fertilisers for farming. This holistic project has educated the entire community about public healthcare, renewable energy and waste, environmental protection and safer agricultural produce.

Creating or enabling access to better education is often one of the most effective, albeit challenging, ways to combat chronic poverty and stimulate community development. Improving educational infrastructures, building better and more effective educational resources, enabling disadvantaged children to return to school or continue education, and enhancing teachers' skills and knowledge are possible areas for intervention identified by Mercy Relief to address the education sector's needs, both in times of peace and following disasters.

It is, however, important to note that impoverished or remote communities may lack longer-term planning capability due to their constant preoccupation with survival. Hence, the culture of learning cannot be imposed on them overnight. It is imperative that in engaging these communities, any education programme should include other developmental efforts to address their basic survival needs.

Education for sustainable development in higher education: the experience of Gulf universities

Ali Alraouf, Qatar University, Doha, Qatar

For several decades, the six member states of the Gulf Cooperation Council (GCC), Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, have witnessed a tremendous transformation of almost all aspects of socio-economic and political life. In the closing years of the millennium, the Gulf societies looked very different from what they were in the aftermath of the Second World War. One of the most salient, and least analysed, developments is the change in their educational systems. By the late 1990s, the great majority of young Gulf citizens had the opportunity to receive formal education. Furthermore, the literacy rate among adults has more than doubled in the last few decades. This dramatic shift in the educational system of the Gulf States has put more pressures on these states to go further with educational reforms. The need to reorient education to address sustainability has grabbed international attention, but the need to deal with it at the university level in the Gulf region is just as great as anywhere. While many nations around the world have embraced the need for education to achieve sustainability, only limited progress has been made. In some cases, a lack of vision or awareness has impeded progress — in others, a lack of policy or implementation.

Education, sustainability and the Gulf universities: clarity of definitions

Observations of how sustainability is perceived and interpreted in academia throughout the Gulf States suggest a tangible lack of clarity. Gulf universities are confused regarding the interchangeable nature of the key concepts – sustainability of education, education for sustainability and education for sustainable development (ESD) – that relate education to sustainability. ESD is the term most used internationally and by the United Nations. Agenda 21 was the first international document that identified education as an essential tool for achieving sustainable development and highlighted areas of action for education.[1] Without a material system capable of functioning for a long time, there is nothing to sustain. This is, of course, the literal and pragmatic conceptualization

Image: Qatar University

ESD teaching and research in Gulf universities is not very well developed

Image: Qatar University

Qatar has established a department of architecture and urban planning

of 'sustainability' that is most often associated with environmental sustainability. It addresses whether actions taken by humanity are degrading the Earth's carrying capacity to the point where the planet will no longer be able to sustain its biodiversity.[2] Sustainability is not only about surviving injustice, wars and violence. Rather, it is multi-dimensional (integrative, ethical and active), as it is only with an inclusive perspective that humanity's consciousness, communication and actions at any level will begin to be transformed.

Emerging Gulf urbanization

According to official statistics concerning the development of the Gulf States, this decade has seen qualitative and quantitative leaps. For a country like the United Arab Emirates, urban development is a major concern of policymakers, planners, public officials and environmental advocates. The United Arab Emirates has been progressing steadily on the path of growth and development over the last three decades, propelled by an oil-rich economy. Although not affluent in other natural resources, the country has scored high on development indices in recent years due to unprecedented economic growth, high per capita income and vigorous social development. The nations in the Arabian Gulf region have emerged as a hub of commerce, stability, security and peace. According to the 2005 Human Development Index Report compiled by the United Nations Development Programme (UNDP), the Gulf States have risen substantially in rank among the developed nations of the world. Because of their economic growth and relatively open immigration policies, the Gulf States have attracted large numbers of people from all over the world, particularly from Asia and Europe, and have urbanized rapidly over a comparatively brief time frame. Prominent cities like Dubai, Manama, Doha, Abu Dhabi and Riyadh have expanded to several times their previous sizes, even as recently as the 1970s and 1980s. Today, these cities feature prominently on the global map of emerging places.

Education and global issues:

How does education connect Gulf cities to the world in the age of globalization? According to numerous researchers, the challenge for contemporary cities aspiring to development is reflected in the ability to be well connected and networked with the rest of the globe. Part of this connectivity is associated with awareness of global problems and threats. The world is struggling with the unsustainable course set by Western society just as other regions are striving to imitate that course. We are facing climate change, rising populations, drought, floods, hunger, intensifying storms, depleting resources, destruction of human and non-human habitats, the potential of rising sea levels and the realization that we cannot maintain a growing economy within a finite world. Interestingly, research studies have shown that new generations in the Gulf are well exposed to global issues. A typical child is connected to the world in real time via Blackberry or iPhone. Availability of Internet for children and youth in the Gulf is similar to that in some of the most developed countries in the west. Gulf children and youth also travel extensively, accompanied by their parents or alone.

ESD: Gulf universities' experience

There are urban planning departments in all six Gulf states.[3] It is worth looking at the nature of these programmes, and their philosophy, vision and mission, to understand their ties with sustainability concepts and principles. An important quality of ESD is that of envisioning — being able to imagine a better future. The premise is that if we know where we want to go, we will be better able to work out how to get there. This requires critical thinking and reflection — learning to question our current belief systems and to recognize the assumptions underlying our knowledge, perspective and opinions. Critical thinking skills help people to examine economic, environmental, social and cultural structures in the context of sustainable development.

Image: Basil D Soufi

The American University in Sharjah (above), the University of Sharjah and Ajman University opened departments of design and architecture

Urban planning departments and schools in Gulf universities were established under the umbrella of engineering colleges. More paradoxically, schools of architecture were never independent and were seen as entities within civil engineering. This is still the case at University of Bahrain and Sultan Qabous University, the official government university in Oman. Qatar recently established a new department of architecture and urban planning to replace the traditional one, which was dominated by civil engineers. Kuwait University, pressured by the American accreditation agencies, is changing the identity of its school of architecture from architectural engineering to architecture supported by urban design. United Arab Emirates is also an interesting case. The State has two of the most accelerated centers of urban growth in the Middle East: Dubai and Abu Dhabi. Teaching of planning and architecture was previously limited to UAE University in Al Ain. Later three more schools were added at Sharjah and Ajman.[4] (In addition, the American University in Sharjah (AUS), the University of Sharjah and Ajman University opened departments of design and architecture.) Architecture is the principal focus of the four programmes at UAE University. Courses related to planning or sustainable development are limited or in some cases non-existent.

Oman is considered a unique case within the Gulf States development race during the last decade. The development strategy of Oman is based on environmental tourism in addition to oil profits. The country is blessed with a variety of natural treasures, which the country's rulers and their advisors were clever enough to acknowledge as a driving force for the country's prosperity. The only school of architecture is again contained within the civil engineering department. Three years ago, Qabous University decided to apply for American accreditation. As was the case at UAE University, they have selected the accreditation body responsible for engineering programs (ABET). The result is a drift away from architecture and planning and a move towards engineering programmes. Planning, urban design and sustainability courses do not exist in the current programmes.

Sustainability awareness

The United Nations Decade for Education for Sustainable Development (DESD) is characterized as a political initiative that could strengthen international cooperation towards the development and sharing of innovative ESD activities and policies.

The overall goal of the DESD is the integration of the principles, values and practices of sustainable development (SD) into all aspects of education and learning to encourage changes in behavior. It emphasizes the importance of partnerships in the eventual success of the DESD and outlines how these might contribute at all levels — community, national, regional, international, continental and global. The DESD at the national level tends to provide an opportunity for refining and promoting the vision of and transition to SD, through all forms of education, public awareness and training. The implementation of SD is important for all formal, non-formal and informal activities, also in higher education.

Many higher education institutions in the region have not yet fully responded to this major challenge of our time by making sustainability central to the critical dimensions of university life: curriculum; research and scholarship; operations; community outreach, partnerships and service; student opportunities; and institutional mission and structure.

There is a notable presence of ESD in national policy documents of the GCC countries. The majority of them address broadening participation in ESD and its integration in curricula. ESD is mainly integrated in national educational policies and curricula, especially in primary and secondary education but also in sustainable development and environmental strategies.

However, most countries do not yet have specific national ESD policies or strategies. Specific policies that support informal and non-formal learning in the context of SD are not reported (which is not to say that they do not exist in countries and regions that stress the importance of community participation and multi-stakeholder social learning).

ESD teaching and research in Gulf universities is not very well developed. The vast majority of the countries lack programmes in ESD and do not report support for ESD innovation and capacity-building. ESD-related research that takes place is mostly focused on teaching and research in topics related to ESD.

As ESD practice is on the rise, there is an increased need for ESD quality assessment. Many of the existing ESD quality assessment schemes (e.g. the development of ESD indicators) are supported by international bodies rather than by national governments, and innovations in teaching and learning are still in their early stages. Curriculum development activities should be at the forefront of research and development of these new forms of teaching and learning and the kinds of curricula, learning environments and school-community relationships that will allow such learning to flourish. At the same time, educational policies and support mechanisms that allow for more integrated forms of teaching and learning are lacking.

Moving towards change

While sustainability is becoming popular in both institutional and professional realms in the Gulf, the case is different in schools of planning and architecture. ESD is almost absent in Gulf States universities. This puts pressure on education authorities in the Gulf to redirect both undergraduate and postgraduate programmes to consider ESD and its impact on pedagogical strategies. ESD is based on the idea that communities and educational systems within communities need to dovetail their sustainability efforts. Gulf States have made great strides in their efforts to develop their societies. These include creating a modern economic infrastructure and upgrading their educational systems. This 'revolution' in the quantitative levels of education, however, suffers from qualitative deficiencies. The types of academic learning and technical training are not geared toward the requirements of sustainable society. These states need to develop sustainability goals, and their educational systems should move towards modifying existing curricula to reinforce those goals. The experience of the Gulf universities shows that many institutions have not developed sustainability goals or action plans on which to base educational change. An important priority for these states is the development of sustainability goals, and the modification of existing educational curricula to reinforce those goals.

Entrepreneurship as the fishing rod in place of the fish

Young-Gil Kim, PhD and George Gihong Kim, PhD, Handong Global University, Pohang, Korea

The world community has been spending a great deal of effort on tackling world hunger and poverty, especially since the adoption of the Millennium Development Goals (MDGs), but now that we are rapidly approaching 2015 and many of the resources have been spent, the result is much less than hoped for originally. There may be many reasons for the limited result, but one basic common problem seems to be the lack of sustainability of the initiatives undertaken.

Changing mindsets

Establishment of the will to act generally requires a change of mindset among the people involved. This change should bring motivation and hope to the community. It requires more than simply learning what needs to change. A profound experience, rather than a transfer of knowledge, can often trigger the more profound change in learners needed to address sustainable development. This can best be brought about through Education for Sustainable Development (ESD), which not only conveys information but also gives learners a more holistic experience.

It is often said that 'what is needed is a fishing rod instead of a fish' and that education should equip learners in this regard. However, the metaphor alone is not helpful without knowing exactly what the fishing rod means in real life. Essentially, it is what modern education should offer to learners through the change of mindset it can offer them. This change brings people encouragement and confidence and breeds hope for a more sustainable future.

The motivation to do something to improve living conditions is often called the entrepreneurial spirit. In a broad sense, this spirit refers to 'creating something from nothing', compared with its narrow sense, which is 'starting a new business'. Most understand only the latter meaning of entrepreneurship, since people with an entrepreneurial mindset in the wider sense tend to start new enterprises.

For decades, there has been debate as to the role of entrepreneurship in development, and it seems that there is a convergence of opinions regarding what entrepreneurship contributes to the development of a country.[2,3,4,5,6] The traditional model for assisting low-income countries has mainly been based on unconditional cash grants. It usually relies on the governments of the recipient countries for dissemination of the aid funds. However, this approach has turned out to be unsustainable and has shown only limited long-term impacts. Moreover, it often has detrimental side-effects for the recipient countries. Most of all, the short-term perspective of this kind of project cannot offer robust long-term sustainability.

The vital role of education

A more effective way to assist low-income countries might be to equip them with education in entrepreneurship, to give people the means to create their

Image: GET'10 in East Africa

Classroom consultation. communication is an important part of HGU's training programmes

Image: GET'10 in East Africa

Group discussion. students compare their findings during an entrepreneurship programme

Image: GET'10 in East Africa

27 June –3 July 2010, Limuru, Kenya. More than 80 students (orange) from seven countries in East Africa participated with six faculty (orange), two staff (orange) and 32 student helpers (blue) from HGU of Korea and St. Paul's of Kenya

own employment and business opportunities. Educating people in entrepreneurship should lead to increased tax revenue, which also strengthens governments, thus truly building the institutional capacity for sustainable development in low-income countries.

Investing aid funds in the creation of businesses and economies rather than consuming them outright is like incubating eggs to raise chickens, which will in turn lay more eggs, until a stock of egg-laying chickens is established, which will continue supplying eggs forever, compared with consuming the eggs at the beginning, which would not offer any sustainability.

For situations where entrepreneurship skills need to be strengthened, this concept should be introduced through education that meets the needs of all the people in the country.

Ethics as part of entrepreneurship education is paramount for the success of the above scheme, since entrepreneurs' strict adherence to ethics builds the necessary trust among investors and consumers alike. Also, entrepreneurship is so powerful that ethics education is crucial to channel its power so that it is used for serving a development that is respectful of the social, economic and environmental dimensions.

Tool to reduce 'brain drain'

Fostering entrepreneurship is the best way to stem the 'brain drain' that has been an important factor hindering development for most low-income countries. This phenomenon is usually caused by highly educated people's natural desire to find jobs that utilize their skills wherever the opportunity exists. High-skill education is necessary for advancement of low-income countries, but it has to be accompanied by entrepreneurship education for it to be effective. It has to teach people how to create employment opportunities in their countries by starting new enterprises that will create locally and culturally appropriate products and services, using the high-level skills they have acquired. It is the task of people in all countries to develop products and services that are marketable in, and relevant to, their countries, exploiting the forward-looking skills that they have learned and establishing the necessary businesses.

Handong Global University's entrepreneurship education for world development

HGU's entrepreneurship education philosophy

As the world becomes globalized, international trade is an ever more crucial part of the economies of all countries. Disciplines that have traditionally been separate have grown, overlapped and intertwined as issues become increasingly globalized and complicated. Entrepreneurship education for future leaders of developing countries should include multi-disciplinary, holistic training that transcends the traditional boundaries of different disciplines and has a sound moral basis. Recognizing the importance of entrepreneurship education for future global leaders, Handong Global University (HGU) started an entrepreneurship leader-

Image: GET '10 in East Africa

Group for business development. Nine such groups competed and developed business plans

Image: GET '10 in East Africa

Classroom lecture. Each day there are four two-hour lectures/seminars with group workshops in the evening

ship education programme that is interdisciplinary and integrates technology, business and law.

Global EDISON Academy and Global Entrepreneurship Educational Program

In order to realize the educational goal outlined above, HGU created Global EDISON Academy (GEA), a new school that offers bachelor's degrees in entrepreneurship, allowing students to co-major in entrepreneurship. It also developed the Global Entrepreneurship Education Program (GEEP) and Global Entrepreneurship Training (GET), a one-week intensive training course in entrepreneurship for future leaders of developing countries, under the partial financial support of the Korea UNDP and the Korean Government. HGU has been offering the GET sessions in developing countries under the auspices of the UNESCO University Twinning and Networking Programme (UNITWIN) on capacity-building for sustainable development for developing countries, of which HGU is the host university. It has been offering these sessions in cooperation with the UNITWIN partner universities, whose membership comprises 23 representatives from 13 countries. Each training session is not a trivial undertaking — nearly twenty HGU student helpers, along with five or more professors and staff, travel to the partner country with all the required supplies and tools/equipment. A number of student helpers and faculty members join from local partnering schools. However, the effort has been highly rewarding. So far, five such sessions have been offered in four different countries, and many of the graduates have already started companies, at least one of them with tens of millions of USD in revenue. Many students regard the session as a life-changing experience.

The last session, GET 10 in East Africa, was held in Nairobi, Kenya. Taylor University from the US also joined as a partnering school as part of the North-North leg, and St. Paul's University in Kenya as the North-South leg of the North-North-South-South quadrangular cooperative effort that HGU is pursuing. Also, HGU opened its first Regional Center for Entrepreneurship Education in Nairobi, in cooperation with St. Paul's University, to offer sustained entrepreneurship education for the East African region in between the regular GET Sessions as part of the South-South leg of the quadrangular cooperative effort.

HGU's effort to propagate entrepreneurship education

The GET and related activities, especially the North-South-South triangular and North-North-South-South quadrangular cooperation that HGU started practising, are being watched by the UN and world communities with great interest. In order to expand its network of cooperation, HGU also joined UN Academic Impact (UNAI) and is planning a UNAI international experience-sharing meeting in Korea in the second half of 2011.

Handong Graduate School of Global Entrepreneurship and Development

HGU is opening Handong Graduate School of Global Entrepreneurship and Development (HGS GE&D) with the primary goal of raising highly skilled professionals for world development among future leaders in low-income countries who can use entrepreneurship as their main tool. It will offer a Master's Degree in Global Entrepreneurship and Development and provide high-level education in entrepreneurship as the main tool for capacity-building for sustainable development.

The future of the fishing rod

HGU believes that the world community should assist low-income countries by offering entrepreneurship education specifically targeting future leaders. The university is convinced that an entrepreneurship education will give people the hope, motivation and skills necessary for the development of their countries on the basis of their own culture and vision of development.

The traditional approaches for assisting low-income countries tend to target mainly projects designed and developed externally, but HGU's approach is different, focusing on educating people to be independent and create their own business opportunities, thus encouraging development that is sustainable because it is endogenous. Going back to the metaphor used above, this is how HGU provides a fishing rod for long-term sustainable development.

Strategies to reinforce the role of ICT in teaching and learning for sustainability

Professor Vassilios Makrakis, Department of Primary Education, University of Crete, Greece

Three forces are shaping and driving 21st century education: the development and diffusion of information and communication technology (ICT), the increasing demand for new educational approaches and pedagogies that foster transformative and lifelong learning, and the reorientation of educational curricula to address sustainable development (SD). The link between ICT, transformative learning and SD is being addressed by extensive debates and research which recognize the challenge new technologies bring to the reorientation of education towards learning to live sustainably. Some higher education institutions, but not many, have begun to take advantage of the potential offered by ICT to reorient their study programmes to address sustainability and cope with the barriers encountered. The results of the 2008 International Survey prepared for UNESCO revealed some of the more prevalent barriers to addressing education for sustainability to be too few (or inadequately trained) professionals to provide inspired education for sustainable development (ESD), limited staff awareness and expertise, overcrowded curricula and lack of new teaching methods and courses. There is also insufficient funding and inadequate national, provincial and local policy to support ESD. Disciplinary boundaries between subject areas persist, as well as a lack of educational leadership to support transformative efforts to address sustainability.

Responses to these challenges

As a response to these challenges and barriers, the UNESCO Chair ICT in Education for Sustainable Development, established at the University of Crete in 2008, has set up a number of projects:

Developing Web-based curricula addressing education for climate change

We have set up a working group consisting of experts in ICT, Education for Climate Change and Instructional Design to develop web-based inter/cross-disciplinary curricula addressing the integration of climate change in the Greek school curriculum. The instructional material we are developing is expected to engage primary school learners in social activism and an exploration of the impacts of climate change on ecosystems and natural resources, on local communities, and on individuals and global society. We are open to international cooperation from Ministries of Education and Foundations to transfer our know-how through customization to their own educational systems.

A Euro-Mediterranean online ESD 'community of practice' for reforming higher education curricula to address sustainable development

This participatory action research project aims at developing a Euro-Mediterranean 'community of practice' in higher education committed to the principles of transformative learning and sustainable development. In particular, it aims to design, develop and assess an online community that goes beyond awareness raising to a re-orientation of higher education curricula and campus practices to address sustainability. It is founded on a sound basis of merging theory and practice in higher education systems and constructivist, Web-based, open and flexible learning management systems. This project is integrated into the TEMPUS project, 'Reorient University Curricula to Address Sustainability', involving universities from five European Union countries as well as from Egypt, Jordan and Lebanon.

Development of an online problem-based learning environment for health education

This project deals with the development and assessment of an online problem-based learning 'community of practice' enriched with inter-disciplinary hypermedia-based instructional lessons on health education issues. Participatory action research is the research method adopted, with two parallel action research teams working together in the prefectures of Rethymnon and Chania on the island of Crete. Through this project we are expected to provide sustained, reform-based professional development to guide teams of teachers through the process of creating and implementing interdisciplinary and cross-disciplinary hypermedia-based learning interventions, focusing on local environmental health issues for primary and lower secondary school students. This project invites international cooperation from Ministries of Education and Foundations, which may integrate our know-how in their own educational systems.

Image: V. Makrakis

WikiQuESD authoring and learning platform

WikiQuESD

This concerns an action research initiative geared towards developing strategies for using digital media and technology to help pre-service and in-service teachers both understand and contribute to the UN Decade of Education for Sustainable Development (DESD). A major question addressed in this project is how to profit from open education resources concerned with sustainability issues and how to empower teachers to function as change agents with the support of more advanced learning technologies. 'WikiQuESD' integrates Wiki technologies, the WebQuest idea and ESD. It is used as a scaffolding hypermedia tool to turn teachers from instructional content users to ICT-enabled ESD curriculum developers. WikiQuESD applications are being designed to use multimedia (images, animation, videos, text and sound), various mind tools and open education learning objects to promote collaboration, connectivity, 'real-world' learning and systems thinking, which are emerging as key pedagogical methods conducive to education for sustainability. Results of an assessment study revealed that the WikiQuESD concept and platform can give both teachers and students a voice in teaching and curriculum decisions that is often neglected in education.

ICT-enabled ESD

Seven European universities with considerable experience in the fields of ICT and ESD, from Greece (University of Crete), Ireland (Dublin City University), Latvia (Daugavpils University), Cyprus (Frederick University and Open University of Cyprus) and Sweden (Uppsala University), formed a consortium under the coordination of the University of Crete (UNESCO Chair ICT in ESD) to submit a project entitled 'ICT-enabled in Education for Sustainable Development' within the framework of the ERASMUS Virtual Campus Programme. This project, which has been selected and financed by the European Commission, aims to develop a joint online Master's degree in the field of ICT in ESD, offered in English. It targets experienced practitioners in schools, colleges, community education, non-governmental organozations (NGOs), government bodies and development agencies, all of whom are engaged in applying ESD in many different contexts and countries.

Through this joint effort, we are making considerable innovative progress, both to improve our own universities' sustainability profiles by developing learning environments conducive to ESD supported by ICTs, and also to develop a new, open and flexible postgraduate programme that responds to the increasing needs of experienced practitioners who want to play a key role in moving forward the issue of ESD. The content of the curriculum design and development is participatory (e.g. involving end users, teacher trainers, teachers and students in the process), interdisciplinary (involving various subjects), contextual (dealing with local/global sustainable development issues), holistic (balancing environmental, social, cultural and economic pillars of sustainable development) and interactive (ICT-based). It also reflects a shift away from reliance on structured and compartmentalized Master's course curricula by focusing on curriculum as process (learner-centred) and praxis (transformative and reflective). It provides tools and services that facilitate social networking and allows for virtual collaboration and virtual peer mentoring amongst learners and e-tutors. The joint Master's programme will be ready to take its first students in the academic year 2012-13. It will consist of 120 European Credit Transfer and Accumulation System (ECTS) credits — 90 for the course work and 30 for the dissertation.

Changes envisaged include: greater access of experienced teachers and teacher trainers to be trained as ESD Leaders in their formal and/or non-formal settings independent of temporal and geographical restriction; an interdisciplinary and individualized programme of study on how to use ICT in integrating ESD issues reflecting environmental, social, economic and cultural perspectives; competent ESD practitioners taking leading roles in their education settings and functioning as human resources for transformative ESD practices; and promotion of virtual student and staff mobility, which adds value to a new dimension of mobility.

TEMPUS Project 'Reorient University Curricula to Address Sustainability'

A consortium consisting of six European Universities (University of Crete, University of Athens, Dublin City University, University of Padova, University of Bordeaux and University of Stockholm), together with universities from Egypt (Heliopolis University for Sustainable Development and Suez Canal University), Jordan (Hashemite University and University of Jordan) and Lebanon (University La Sagese and Notre Dame University), together with the UNESCO Regional Office for the Arab States and three NGOs, MIO/ESCDE/MEdIES, IndyACT and SEKEM Development Foundation, formed a consortium under the coordination of the University of Crete to submit a TEMPUS project entitled 'Reorient University Curricula to Address Sustainability'. The project was approved by the relevant authorities of the European Commission.

The overarching goal of the project is to help partner higher education institutions to infuse ESD into their curricula and teaching methodology through capacity-building among university staff. The key question is how to best advance curriculum change towards ESD, given the regional priorities and the need to modernize curricula to address ESD. This cannot be achieved without well-prepared and committed staff to lead curriculum reform and innovation.

The project integrates a wide range of activities to develop resources, revise and develop new curriculum initiatives, build capacity and strengthen national and regional networks. More specifically, the project-specific objectives are to:

- Support the development of ESD in the higher education sector in Egypt, Jordan and Lebanon
- Build capacity amongst university staff to embed ESD in curricula and pedagogy
- Review and revise undergraduate curricula to address ESD in line with Bologna and Lisbon processes
- Assist the coordination and dissemination of ESD policy, research, curriculum reform and practice relating to ESD in the partner institutions that are expected to function as role models in the region.

This process entails six key components:

- Develop ESD competences for higher education students, contextualized to the E.U. and Arab region
- Evaluate ESD student competences in the participating higher education institutions
- Establish new models of professional development in ESD
- Revise education and certification requirements to include ESD and align these revisions to correspond to the ESD student competences and the Bologna process
- Apply and evaluate the revised education curricula with respect to the ESD student competences
- Promote the reorientation of higher education towards ESD as a viable avenue for 'whole institution' curriculum reform, research and teaching across all higher education institutions in the Arab region.

The development, adoption and implementation of each of these components will be articulated over the three-year duration of the project (October 2010—September 2013). Curriculum review and revision will be carried out in the disciplines of Educational Sciences, Engineering, Information Technology and Applied Sciences. Appropriate resources will be developed, such as an ESD Curriculum Review Toolkit and Virtual Centers for Curriculum Reform in every partner higher education institution. Workshops will be implemented to prepare university staff for curriculum review and development of syllabuses/modules addressing ESD. It is expected that more than 40 per cent of the content of the study programmes in the disciplines involved will be redesigned to address sustainability issues. Institutional mechanisms, inter-faculty cooperation and inter-faculty student mobility will be developed to ensure continuity. A pilot initiative for student placement and practicum in local NGOs connected to ESD will be implemented to strengthen the role of higher education institutions in society to reach the targets of the DESD.

Regional Centre of Expertise (RCE) Crete on ESD

The RCE Crete was established and acknowledged by the United Nations University in 2009 and is led by the UNESCO Chair ICT in ESD, Department of Primary Education, University of Crete. It brings together local actors (higher education institutions, local government bodies, municipalities, chambers of commerce and environmental education centres) to tackle the following key regional challenges:

- *Stressed natural resources*: Reduction of waste of our natural resources, such as water, energy and solid waste, is critical for the region's sustainable future
- *A changing climate*: 50 per cent of land in Crete is at high risk of desertification, with dire regional and national consequences
- *Deforestation*: Forests in Crete are threatened not only by overgrazing but also by forest fires, whether deliberate or accidental
- *Threatened biodiversity*: Conservation of endangered animals and native plants of Crete is at a critical point
- *Alternative tourism development*: Crete's sustainability will be seriously threatened and its irreplaceable natural and cultural resources will be irreversibly damaged unless the tourist industry is re-conceptualized
- *Loss of indigenous knowledge*: Indigenous knowledge is rapidly being lost and thus needs to be preserved for the benefit of future generations.

The vision of the RCE Crete is to tackle the problems identified in the key ESD challenges in the region and contribute to the promotion of ESD locally, regionally and globally. Specific objectives include the development of a Web-based platform for promoting dialogue among the key regional stakeholders involved and other interested groups to turn Crete into a sustainable region.

Another objective is to raise public awareness and action regarding the key sustainability issues in the region, especially concerning threatened biodiversity, sustainable agriculture, desertification and traditional knowledge for a sustainable way of life in the region. Short-term sustainability activities will gradually expand to broader areas such as cities/communities, schools and higher education institutions, businesses and households.

Interregional and global collaboration with other RCEs will be encouraged, with the development of joint projects, research and mechanisms for sharing and disseminating accumulated knowledge, experiences, expertise and examples of good practices in ESD.

Major projects (2010–2014)

- Develop a Master Action Plan that will help transform the City of Rethymnon into a model of a sustainable city that is clean, healthy, resource-efficient and environmentally conscientious
- Develop a Sustainable Community Toolkit that will provide ideas and descriptions of specific actions that a local government in the region of Crete can take to transform itself into a model of sustainable practices
- Develop and implement the concept of 'ESD School Resource Teacher' through a Web-based training system
- Design and develop case studies on ESD regionally, challenging selected primary and secondary schools to provide a foundation for addressing these themes across all schools in the region
- Explore the development of alternative tourism through the measurement of attitudes and current actions towards sustainable tourism
- Develop a systematic cataloguing of indigenous knowledge and explore its utilization to promote the sustainable development in the region.

It is hoped that all of the above initiatives and projects will continue to enhance the prospect of achieving a sustainable future through best practices in ESD.

Transforming childhood: from reinforcing consumerism to inspiring sustainable living

Erik Assadourian, Senior Fellow, Worldwatch Institute and Executive Director, The Fangorn Group

School is an important influence in children's lives. Most children around the world spend more than 180 days per year in school — typically five to six hours a day — learning basic literacy, cultural norms and societal mores.[1] Some children, for example in Japan, spend more than 240 days in school each year.[2] Formal education is still a central force in shaping children's values, thoughts and ambitions. But in many countries, the media are just as, if not more, influential in shaping childhood. In the United States, children now spend an average of 7.5 hours a day, 365 days a year, engaging with various media.[3] And since US children today are multi-taskers, they're actually cramming nearly 11 hours of media exposure into those 7.5 hours.[4] Each year, marketers spend more than USD17 billion marketing to children worldwide — much of this directed through the media.[5] The media and marketers have become primary caregivers for a large percentage of the world's children today, with parents and teachers playing supporting roles at best.

Unfortunately, the values, information and ambitions cultivated by the media and marketers are often at cross purposes with the educational messages shared in schools — especially regarding sustainable living. For example, while school lessons may regularly discuss the importance of healthy eating, these lessons are drowned out by the presence of vending machines, sweet-sponsored curricular materials in classrooms, unhealthy school menus and the countless advertisements that fast food and sweet companies target at children.[6]

Of course, it is not surprising that marketers have so aggressively targeted children, as children have significant discretionary income and can play an important role in influencing parents' spending choices.[7] Businesses recognize this and market to them. Some, like The Walt Disney Company, even hire anthropologists to better understand children's interests, hobbies and purchasing preferences, so that their marketing campaigns can be more effective.[8] The unfortunate side effect is that childhood is filled with hundreds of advertisements a day, all of which reinforce a perception of reality that happiness comes through the products and services one buys, owns and uses.[9]

Image: Leonid Mamchenkov

Watching TV. The media are influential in shaping children's values and preferences

To create sustainable cultures, we need to transform education — and childhood more broadly — so that children no longer grow up learning to be consumers but instead learn to become guardians of the environment and active healers of the Earth's systems. The only question is how to achieve this. In short, there are three aspects of childhood that will need to be addressed. Firstly, we will need to address children's access to the media and what children are exposed to through the media. Secondly, leisure time activities will need to be designed to reinforce principles of sustainability and respect for nature. And thirdly, formal education will need to integrate principles of sustainability directly into all aspects of the educational experience. If these three elements of childhood can be systematically reformulated, perhaps today's children will no longer grow up mimicking film celebrities and rock stars, but instead will strive to be like our boldest environmental and political leaders. And perhaps children will no longer covet the newest 'iGadget' and fashion accessory, but instead work to obtain the next Earth Scout badge and environmental education award. This shift is possible, but it will not come without a concerted effort to redesign three key elements of childhood: formal education, leisure activities and media influences.

Addressing media exposure

Such a significant amount of time is spent by children with the media, much of the content reinforcing consumerist values and pitching consumer goods, that the first and foremost task will be to rein in marketers' influence over the media and children's total media access.

One of the key tools for this is of course to better monitor marketing to children. Several Scandinavian countries have done so recently and, in the past few years, Spain has become a leader in curbing marketing exposure to its population, first by banning advertisements on its

national television stations, and then by banning ads for products that promote the 'cult of body' and unhealthy perceptions of health (such as ads for cosmetics and plastic surgery) on prime time television.[10]

And of course, the Framework Convention on Tobacco Control helped to rein in exposure to tobacco marketing in many countries, helping to slow rates of smoking growth.[11] There is strong evidence that marketing stimulates consumption, including the marketing of unhealthy foods with food purchasing preferences.[12] Hence, the recent recommendations by the World Health Organization to limit food marketing aimed at children and to keep schools free of all food marketing are an exciting development.[13] Accelerating this effort will be an important step in reducing total marketing exposure among children, as junk food makes up a large portion of overall marketing to children.[14]

Putting a tax on other, less directly harmful, forms of marketing to children would also be useful, as this would make marketing more expensive and thus reduce total volume. Additionally, this revenue could be used to pay for 'social marketing', which could help counter the effects of marketing and 'sell' sustainable living to children — normalizing sustainability messages while encouraging children to play outdoors, volunteer in their communities, eat healthily, not use disposable packaging and partake in many other sustainable behaviours.[15]

Taxing certain forms of media might also be an effective means of reining in total time spent with the media while also creating new funding to support more sustainable childhood activities. For example, children in the US currently spend 1.2 hours playing video games daily and 4.5 hours watching TV.[16] These are hours of minimal physical activity. Creating a new tax on video games and TV programming could create a new revenue source to fund sports and outdoors activities in schools. The same type of tax could be applied to other forms of media. These small taxes could be a form of 'choice editing' that helps to nudge children to favour one form of leisure over another.[17]

Redirecting leisure time

Along with using financial tools to shift how children spend their free time, we will need to proactively cultivate leisure time activities that reinforce environmental values and principles of sustainability. Toy libraries, museums that teach sustainability and childhood education programmes like the Earth Scouts could all be better integrated into childhood to promote sustainable living.

Toy libraries are one innovative way to help children learn to play together, share and save communities' resources while bringing them closer together. A recent study found that there are 4,500 toy libraries located in 31 countries.[18] These not only provide an alternative to the consumerist childhood where children's rooms are overflowing with toys, but they also help teach important lessons in sharing, reduce overall consumption and help parents screen certain types of toys that are of questionable value. With this simple tool, children can maintain rich childhoods, learn valuable lessons and have a smaller overall environmental impact.[19]

Museums and other informal educational institutions like zoos and public libraries can also play an important role in exposing sustainability ideas and values to children. The California Academy of Sciences (CAS) is one example of a museum that has made this shift — converting its mission to focus on sustainability. This natural history museum not only wants to inspire visitors of all ages to get excited about sustainability and provides many programmes to do this, but it also models sustainability in its very design.[20] Its green roofs, solar panels and LEED Platinum certification are all displayed very publicly in order to show visitors that sustainability is not some utopian dream, but can be readily integrated into daily life.[21] While CAS was helped along in this transformation by an earthquake that forced its redesign, governments can play a key role in accelerating these types of mission updates by providing specific funding to those institutions that want to strengthen their focus on sustainability.

Extracurricular programmes that teach environmental literacy and ecological citizenship can also play an important role in creating fun ways to encourage outdoor activities for children. One of these programmes, the

Image: Tea Tree Gully Toy Library, courtesy of Helen K via Flickr

Toy libraries can help children maintain rich childhoods, learn valuable lessons and have a smaller overall environmental impact

Image: Earth Sangha

Young students plant a vegetable garden at their elementary school in Washington, D.C.

Earth Scouts, takes a powerful model — the Boy and Girl Scouts — and updates it for life on a finite planet, putting ecological citizenship at the very heart of the training and philosophy of the organization.[22] Increasing resources and community support for this type of organization could help give children more opportunities to experience the outdoors and better understand the importance of their role as ecological stewards, while also providing exercise, more opportunities to build friendships and community cohesion.

Sustainability in formal education

Finally, as important as restructuring time out of school, is restructuring time in school, so that all aspects of formal education reinforce sustainability. Transforming school lessons goes far beyond what is taught in classrooms, but to succeed, it will need to include all aspects of the school day, from lunch and recess, to even the very commute to school.

In many countries of the world, people commute to school in a bus or car, rather than on foot or bike. But some towns are proactively changing this. The town of Lecco in Italy, for example, replaced its school buses with 'walking buses', and today the town's 450 elementary school students walk with parents and volunteer 'drivers' to their ten different schools.[23] Along with preventing over 160,000 kilometres of driving (and the resultant pollution) since their creation in 2003, these walking buses have played an important part in teaching road safety, providing exercise and connecting children to nature.[24]

In the classroom, teachers will need to prioritize sustainability in their lessons. First and foremost, this will mean tackling business-sponsored teaching materials that can subtly spread a company's agenda. School teachers, too often starved of resources, end up taking the materials that are available.[25] Finding revenue to provide materials will be an important way to prevent this.

Beyond this will be the more comprehensive effort to integrate environmental literacy throughout all courses — language, maths, sciences, social studies and so on — rather than relegating it to one elective course in school, as is so often the case today. Moreover, as the media are so influential, special care should be made to integrate media literacy into school courses. The good news is that there are now efforts in a number of countries, and by UNESCO as well, to accelerate media literacy programming in schools — efforts that will hopefully grow during the coming years, as over USD640 billion continues to be spent on advertising every year, making increasing media literacy essential.[26]

Outside of the classroom, particularly in the school playground, schools can benefit significantly from the creation of school gardens. These gardens (and community gardens beyond the school walls) can play a powerful part in reconnecting children to the natural cycles of Earth, and give them a deeper understanding of their dependence on the planet for their survival. Plus, gardens can provide exercise and a direct connection with healthy foods (and more willingness to eat them). Research has also found that time in gardens improves mental well-being.[27] Finally, gardening provides an important skill — one that in the future may be very valuable as the consumer economy butts against the limits of planet Earth and more people return to farming for their livelihoods.[28]

One important part of the school day that is often ignored is lunch. Eating habits are learned from early childhood and providing high-fat, high-sugar foods to children sets them up not just for increased levels of childhood obesity, but also for a lifetime of unhealthy eating. The good news is that all around the world, school systems are working to shift the menus to healthy, local, sustainable foods. Rome is leading the way, with its cafeterias now providing meals to the city's 150,000 students with ingredients that are now more than two-thirds organic, 26 per cent local and 14 per cent fair trade.[29] While few cities are that advanced, many are starting to tackle this difficult issue. Even Washington, D.C. recently banned flavoured milks in the city's school cafeterias, which is a good sign for the US capital.[30]

Finally, while working on enhancing childhood experience, we must remember that addressing childhood without addressing the other stages of life will reduce the odds of success dramatically. While working to change the media's messages to children, we also need to address media messages to all citizens. While adjusting elementary school curricula, extracurricular activities and museum priorities, we also need to work on the teaching priorities of all levels of schooling — from nursery all the way up to university and professional schools.

Imagine if doctors were taught how to prevent illness by teaching patients how to live healthily, or future business leaders were taught that a good business maximizes social well-being, not simply profit. And at the same time, imagine if TV commercials reminded people to eat their vegetables, and magazines like Fortune celebrated the Top 100 Business Leaders each year not by measuring their company's earnings but by how much good their businesses did that year. Education can be a central tool to persuade our cultures to focus on sustainability, but only with significant commitment from educational leaders and support by policymakers and media leaders to support this shift. Only when we can reorient all of these powerful institutions can we hope to live in a culture where living sustainably feels as natural as living as a consumer feels today, and only then can we ensure a sustainable and secure future for humanity.

Looking beyond the Decade: UNESCO's contribution

Aline Bory-Adams, Chief of Section for DESD Coordination and Shivali Lawale, Section for DESD Coordination, Division for the Coordination of United Nations Priorities in Education, UNESCO

No problem can be solved by the same consciousness that created it. We have to learn to see the world anew. These words by Albert Einstein aptly sum up the role that education for sustainable development (ESD) plays today, especially in this era of rapid change in which the social, economic, environmental and cultural realms of global society are faced with daunting challenges.

As an educational paradigm shift, ESD goes beyond the traditional premise of education by providing populations, children and adults alike, with the savoir-faire to tackle the complexities of tomorrow today. Elements like critical thinking, problem solving, futures thinking, systemic thinking and linking the global to the local form the cornerstones of the ESD enterprise.

Given its wide scope and outreach, ESD is not just supportive but also contributes to other education and international development initiatives like Education for All (EFA) and the Millennium Development Goals (MDGs). It addresses the issue of quality within the EFA endeavour by promoting the idea of an expanded vision of education. Since ESD addresses the social, economic, environmental and cultural domains, it plays a catalytic role in the achievement of the eight MDGs. Single-issue or emerging educations like peace education, education for HIV and AIDS, climate change education and human-rights education, among others, are intrinsically linked to ESD.

The growing importance and evolution of ESD can be traced through the series of international conferences that span the last two decades and in the culmination of the UNESCO-led United Nations Decade of Education for Sustainable Development (DESD) 2005-2014, thus bringing it to the political centre stage. The DESD aims to "articulate the overall social project and aim of development"[1] by supporting the inclusion of ESD in traditional forms of learning as well as encouraging new forms of learning that can help populations to respond to sustainable development challenges. To bring this mandate to fruition, UNESCO has been given

Image: © UNESCO/Patrick Lagès

UNESCO: Leading and implementing the UN Decade of Education for Sustainable Development

Image: © UNESCO/Katy Anis

Education for sustainable development: Learning to ensure a better tomorrow

dual responsibility: first, as leader and second, as implementer of the decade. In response, UNESCO has developed and put in place the necessary mechanisms to facilitate delivery on its designated responsibilities.

The opportunity provided by this publication, under the thought-provoking title *Tomorrow Today*, encourages the question of how UNESCO, as an intellectual organization, is preparing for the years following the end of the decade. UNESCO has already contributed significantly to ESD within the framework of the decade in terms of both policy and practice. The momentum created by the DESD needs to be maintained and the achievements accomplished to date taken into account in order to achieve the cherished goal of a sustainable future.

Looking ahead

By focusing on education that encourages the empowerment of both children and adults, the DESD underscores the central role of education as a transformation agent. Transformation in this context refers to changes in the way people, children and adults alike, interact with each other and use environmental and ecological resources, with a view to sustaining them. It also refers to the changes through which people fashion their lives and actions with the aim of achieving or contributing to social and economic justice, locally and globally.[2] All activities under the DESD framework seek to achieve this desired transformation. To this end, an impressive body of ESD programmes, projects and training materials have been developed within the framework of the decade and some even prior to it.

A central question is how to know whether change has indeed taken place — and if it has, whether it is really directing us towards the desired goal of a sustainable future. How do we know whether we have learnt to think critically or in a systemic way?

Proposing a way to assess the learning outcomes of the ESD enterprise could be UNESCO's contribution for the years to come after the decade. The development of a global framework for assessment of ESD learning outcomes could be adjusted by countries to their own needs. The framework would seek to bridge the divide between atomised and interdisciplinary learning and could be applied to various situations, levels and settings of education.

This proposed assessment framework for ESD learning outcomes could be developed using the considerable repository of knowledge within the United Nations that links to learning and education.

The following four United Nations initiatives regarding education and learning could be considered as the basis for the development of the assessment framework for ESD learning outcomes.

Assessment framework for ESD learning outcomes: four elements for consideration

Four pillars of learning: Delors Report

In 1993, UNESCO established the International Commission on Education for the Twenty-first Century. Three years later, the commission submitted an insightful report titled *Learning: the Treasure Within* (also popularly known as the Delors Report) wherein the authors propose a blueprint for education for the new century. The report underscores the frequently stated need for people to "return to education in order to deal with new situations arising in their personal and working lives".[3]

The notion of enhancement of inner capacities and the concept of learning throughout life to address the changes that the rapidly changing world presents are elements that underpin the main recommendations of the report. To this end, the Delors Report proposes that all education should be organized around four pillars of learning:

Image: © UNESCO/Sake Rijpkema

Learning throughout life: a requisite for a sustainable future

- Learning to be
- Learning to know
- Learning to live together
- Learning to do.

The objectives of these proposed pillars intersect and share commonalities, each contributing to the formation of a whole. Learning that goes beyond the instrumental view of education helps to realise the full human potential, thus allowing individuals to lead lives that they value.

To this end, the vision of this report could also be seen not so much in terms of education as in terms of learning and learning outcomes. The four pillars could be used as one of the elements to inform the proposed assessment framework for ESD learning outcomes, as they provide a broad scope and allow space for the interpretation that is necessary to reflect the differences at regional, national and local levels.

DESD Monitoring and Evaluation process: Learning for a Sustainable World report series

The DESD Monitoring and Evaluation process, which spans the life of the decade, comprises three distinct phases, each with a specific focus:

- 2007–2009: Phase I – focusing on contexts and structures for ESD
- 2007–2011: Phase II – focusing on processes and learning for ESD
- 2011–2014: Phase III – focusing on outcomes and impacts of the DESD

Findings from each phase will inform a report.

Since ESD-related learning is still in its very early stages, there was a lack of existing baseline data to inform the process. Efforts in the Europe/North America and Asia/Pacific regions to develop ESD-related assessment frameworks are commendable and have informed the development of the monitoring and evaluation process for the decade at the global level. The database of ESD indicators is slowly but surely developing with every phase, as are the ways to capture valuable information. This database could help countries monitor how well they address all the dimensions of sustainable development and contribute to developing a shared regional and national vision, which is in fact a requisite for ESD.

The body of work achieved through the monitoring and evaluation process for the decade could also be used to develop new and innovative ways of capturing ESD-related information. The area of ESD-related monitoring and evaluation is weakly researched and is a process that is currently being developed in a number of universities around the world.

The monitoring and evaluation process for the decade at the global level has also created awareness in countries about the importance of assessment and to this end, the capacity-building that is necessary. The momentum that has been created by the process needs to be built on and further strengthened.

The lessons learned, the database of indicators developed, and the methods that were used to assess the different phases of the monitoring and evaluation process for the decade at the global level provide a rich and informative body of knowledge that could contribute to informing the development of the assessment framework for the learning outcomes of ESD.

Education for All: enhancing the quality of education

The Dakar World Education Forum in 2000 took the clear position that all human beings have the right "to benefit from an education that will meet their basic learning needs in the best and fullest sense of the term." It echoed the Delors Report in advocating an education that includes "learning to know, to do, to live together and to be."

Image: © UNESCO/Carol Ecker

Human development: a key to poverty reduction

The Dakar Framework for Action 2000 underscores the importance of tapping into each individual's talent and potential and encourages the development of the individual's personality to improve lives and transform societies, now and in the future. These elements find pride of place in the question of quality of education, which in turn is at the heart of ESD.

The issue of quality education underscores the principle of learner-friendliness. To this end, it concentrates on the holistic development of individuals, empowering them to participate and perform in every learning environment that they encounter. By focusing on the needs of every learner, quality education lends support to the aims of the human capability approach.

The human capability approach: tapping into human potential

The first UNDP Human Development Report in 1990 proposed that human welfare should be considered the goal of development and that there was a perceived need "to shift the focus of development economics from national income accounting to people centered policies".[4] The Human Development Index (HDI) was a result of deliberations around this concept. It was Amartya Sen's work on capabilities and functionings that provided the underlying conceptual framework for the development of the HDI. Sen roped in ideas and issues that were excluded from the traditional discourse on the economics of welfare and brought in a whole new dimension of the realization of full human potential.

Education is valuable as an end in itself and has been identified by Sen as a capability to meet basic needs. For education to fully enhance development, it is required that the learning needs of all are met through equitable access to education of such quality that it leads to learning outcomes that enhance the freedom to do, to be and to know. To this end, the capability approach must be seen in terms of learning outcomes.

The capability approach looks at what education empowers people to achieve. This fits well with the intentions of ESD – to help people solve problems and to think critically and in a systemic way. It would be an element of consideration for developing the assessment framework for ESD learning outcomes.

The linkage between quality education, ESD and the human capability approach are evident. To this end, the work around indicators for quality education (among a variety of other issues), which has been developed over the years to inform the development of the *Global Monitoring Report* for Education for All, is another element that could provide support to develop the assessment framework for ESD learning outcomes.

UNESCO's post-decade role

The linkages between the four elements described above certainly have common ground but there is much work to be done before they could be used together to develop a tool for assessing ESD learning outcomes.

If change to ensure a sustainable future is what lies at the heart of the education for sustainable development enterprise, then it is essential to equip people with a mechanism to assess what (if anything) has changed, and whether it is taking them to the desired goal of a sustainable future.

As lead agency for the decade, UNESCO has initiated the process of transformation by promoting, implementing and advocating for ESD. If this momentum is to be maintained, UNESCO needs to initiate thinking around the issue of its contribution post-decade.

His Royal Highness the Prince of Wales told the Copenhag en Climate Summit in December 2009: "Just as mankind has the power to push the world to the brink, so, too, do we have the power to bring it back into balance." UNESCO, on the strength of its work related to ESD during the Decade as well as beyond it, has the power to contribute to restoring that balance.

Democratizing education: the quantity and quality debate

Maya Dodd, Foundation for Liberal and Management Education, Pune, India

Since the 2005 launch of the UN Decade of Education for Sustainable Development, India has realised several initiatives, by both the government and the private sector, towards achieving greater equality in the education sector.

There is, at last, a real recognition of the fact that there cannot be sustainable growth without basic investment in the country's human resources through a systematic education system that caters to capacity-building. Much effort has gone into the creation of an infrastructure that can achieve this end. However, despite recent wide, sweeping reforms in Indian education at the school level, reviews of India's college education structure are clouded by endless controversies. The demands to 'liberalize' college education have leaned on the need for new investment by the private sector at a critical juncture of India's growth. However, for one-fifth of the country's population, the biggest challenge faced is the absence of quality in current standards of college education. The inadequacies in educating vast numbers of Indian young people far exceed issues of regulation or demand-supply deficits. Debates plaguing the Knowledge Commission's recommendations to dissolve the University Grant's Commission's control of universities; the scandal of abuse of powers by the Indian Medical Council in legitimizing colleges; the indiscriminate rise of private education in engineering and management under the purview of the All India Council on Technical Education; and the overall neglect of more inclusive regulations for vocational education all point to the general observation that undergraduate education in India is in desperate need of an overhaul.

The real crisis lies beyond challenges of scale and the rationale of which agents are responsible for providing India's young people with colleges. If all debates on education have been reduced to the urgency of accommodation, post-secondary education has been especially afflicted by a history of deflecting debates on the quality of education by invoking the spectre of numbers. Since independence in 1947, the number of colleges in India increased over 60 years from under 500 to the current total of over 20,000. This educational infrastructure can accommodate only seven per cent of all of India's college-age students, and the low enrolment ratios of today mirror this fact. While by 2010, the population of the 15–24 age group was estimated at 19 per cent of the total population,

Image: FLAME

The FLAME campus in Pune, India

the forecast for increasing inclusiveness falls short. In a recent convocation address, the Union Minister for Human Resource and Development, Kapil Sibal, admitted: "While we aim at scaling up the number of students enrolling in colleges to 42 million in 2020 from the present 14 million, still 160 million students will be left out. To give them alternative education, we need investments that may also come through foreign institutes."

Foreign options

This recourse to foreign investment signals the harsh reality that there is a definite market in India for foreign degrees. At the school level even, new possibilities have emerged for many students who can afford an international baccalaureate (IB) education. Opting for IB schools can, in cities like Mumbai, easily cost around USD2,500 a month and many are comfortable with paying the fees for 'international' quality. IB students frequently go on to an undergraduate education abroad and liberalization seeks to further this option for both the state and the universities seeking new markets.

There is no doubt that the mere scale of India's youth and current infrastructural limitations warrant global alternatives. Already, many reputable universities are poised to set up local campuses within India. A typical accusation from the quality/quantity school of debate would decry those who possess such options. However, the true scandal is not in the reality of those who exercise their choices, but in India's inability to provide more choices for the many who seek a quality college education.

Unequal choices

A true liberalization of Indian college education would successfully redress issues of demographic needs along with that of quality. Previously, democracy's logic dictated that college education had to cater to scale, even at the expense of quality. Today we are dealing with an increasing inequality where democratic reforms allow rich consumer access to a personalized curriculum, while the rest merely fight it out for seats. The anxiety of the middle classes translates into pressures of professional competitiveness (as recently memorialized in the successes of Hindi films such as *Three Idiots* and *Taare Zameen Par*), robbing students of valuable choices.

By reducing all quests for education into that of admission into a profession, the very possibility of another experience is pre-empted. At the core, all the debates on regulation and delivery of quality stem from two basic problems. Firstly, the segregation of knowledge through streamlining that occurs for most Indians at the age of 15, when they have to choose between professional courses or arts, science and commerce. Secondly, under the guise of managing scale through affiliation, universities govern the curricula and admissions procedures of colleges with whose needs they are barely familiar.

While these concerns might seem like operational flaws, their impact on the real-life choices of students cannot be emphasized enough. A common enough practice implemented in liberal arts colleges around the US serves as a fundamental threat to the Indian style of college education, modelled on economies of scale. The idea that undergraduate education should foster a wide view of disciplines — encouraging sampling across several disciplines before the eventual selection of major and minor specializations — is severely alien to Indian colleges. That the current system emphasizes specialization and watertight choices at an early age neatly fits with parental aspirations to early professionalization and guaranteed jobs. Such a system disburses a colonial legacy of fostering narrow expertise for practical application, over the substantive experience of a well-rounded college education that teaches breadth and reflexivity. Sadly, college education has neatly dovetailed with the needs of an information society, further imperilling the sustainable development of the minority of youth, who amidst disparities manage to arrive in college.

Image: FLAME

At FLAME, students spend their first two years acquiring a solid foundation in the fundamentals of several disciplines before choosing a major

Image: FLAME

The quality of college education is closely related to individual happiness in later life

Enrolment and graduation

Early professionalizing reflects a need for employability discernible in the rising enrolments for bachelor's degrees in business management, mass media and computer applications that have become increasingly popular since the late 1990s when first introduced at the undergraduate level. Only recently are some of these degrees even being offered in languages other than English. While the eschewing of local relevance is exacerbated by franchises and the trend to twinning degrees (where students study in India, but pay exorbitant fees to receive their degrees from abroad), state-owned private colleges have long since rendered many debates on local and federal controls moot. One example of this is manifested in the issue of reservations and caste-based quotas. Regulations on universalizing access and quotas for disadvantaged classes to secure admissions have historically not been applicable in private colleges that receive no aid from state funding. While state assistance could enhance the ability of private colleges to better provide for linked research resources and enhanced exposure, even heavily subsidized state colleges do not presume to provide such infrastructure, and private investors prefer to preserve their autonomy over accepting the strings attached with state aid. Consequently, several debates that focus on quotas, grants and regulations do little to genuinely push for an increased quality of education for Indian college students.

For India's young demographic to compete globally, the need for updated choices, access to research resources and a talented faculty have justified the push to liberalize education. Despite the noise about growth rates and new markets, excellence in college education cannot be represented by enrolment ratios and consumer choices, but by the quality of graduating classes. True liberalization would go beyond viewing education as a sector only in need of regulation and investment in scale, to tackling the bigger challenge of producing much needed excellence. Early professional specialization, privatization of infrastructure and maximally efficient mass testing through competitive examinations might be perceived as answers to closing the gap between outdated curricula and current needs. However, these measures barely begin to confront questions of student-teacher ratios, or affording the time needed to fully explore options and strengths in the quest for true graduation. The sheer scale of India's youth ought to invite honest reflection on what it means to liberalize the quality of college education, especially since it is quality that remains in short supply.

The FLAME experiment

Since decisions made at college fundamentally determine career choices in India, the quality of college education is deeply related to individual happiness later in life. At the tender age of 18, not every student already knows their strengths or inclinations towards making irreversible decisions with regard to their careers. Consequently, a pioneering effort at providing students with choices to fully explore their options and reverse the watertight selections between arts, science and commerce has been attempted since 2007 at The Foundation for Liberal and Management Education (FLAME) in Pune.

It is a unique and singular experiment in the Indian education landscape, and has attempted to prove that liberal education can work in a competitive Indian educational environment. According to the FLAME plan of study, students spend their first two years acquiring a solid foundation in the fundamentals of several disciplines. Simple as this may seem, this pattern stands in direct contrast to the tendency towards specialization that is encouraged very early in the Indian system. The liberal education model seeks to push away from that dominant logic, instead encouraging a breadth of exposure to the inherent inter-disciplinarily of all knowledge.

The cornerstones of liberal education are the promotion of a true understanding of global affairs and the fostering of individual curiosity. Class size and scale are important to cultivating individual learning, and despite the small size of a college, FLAME has managed to keep the student teacher ratio at 15:1 and to offer as many as 80 courses to less than 160 students. This

Image: FLAME

FLAME offers as many as 80 courses to less than 160 students

has been made possible by affording faculty flexibility in designing their courses and encouraging a participatory pedagogy. In curricular terms, the plan of study has also been designed to account for individual need through affording liberal choice. Over the first two years of a student's undergraduate career, they receive instruction in rhetoric, logic and ethics and two courses in language. All other subjects are divided across the five universes: humanities, social sciences, sciences, fine and performing arts and global studies. To ensure a fair representation across the spread of 80 courses in these five universes, students make their own choices of subjects at basic or intermediate levels (100 or 200) over their first two years, with the structure guaranteeing exposure to at least three disciplines in each universe. At the beginning of the third year, they elect their major, and/or a minor. As with all majors, a minimum of 60 credits (approximately 20 courses) is required for graduation, and through each term, this translates to approximately five courses a trimester. Even with constraints of size, from the FLAME School of Liberal Education, subjects currently offered at major level include cultural studies, economics, environmental studies, international studies, literature, mathematics, physics, psychology and south Asian studies, alongside traditional offerings in business and communication. The design of the programme focuses on foundational depth and so stimulates interest in interdisciplinary majors such as international and environmental studies. It is interesting that even though India is the only country where the highest court of the land has mandated the study of environmental education at all levels, the possibility to pursue such interests is currently limited by lack of capacity at the post-secondary school level. This should prompt imminent reflection on the need for new majors, programmes of study and interdisciplinary majors as an adequate response to the dynamic nature of the creation and distribution of knowledge in our time. As an introduction to the possibilities of research even at undergraduate level, the Centre for South Asia at FLAME organizes several talks, screenings and symposia to familiarize students with the idea that the study of one's own context can be embarked on in innovative ways. Research opportunities, at every age, are certainly critical to genuine learning. It is this insight of recognizing learning as a dynamic process that drives the need for a return to liberal education in India.

Additionally, the recognition that learning occurs in varied ways should also inform the crafting of new pedagogies to maximize learning at all levels. While affluent students in the rich learning environments of private schools are certainly benefiting from pedagogical experimentation, at the college level very little has been attempted in the arts and sciences. At FLAME, the Discover India programme seeks to grant experiential learning its due, by affording students ten days of field work and research, where they select their own research sites and are responsible for producing original insights into India's heritage. So far, whether it's the study of traditional medicinal systems that have remained hidden from the English mainstream, or ethnographic work on marginal refugee communities, the value of the interactive aspects of this education is significant. The output of this student-driven research adds to generating models of sustainable and cooperative development.

If this model works at a typically collegiate scale of under 400 students and 45 faculty, the FLAME experiment can easily be replicated across India. It is vital that more and more programmes be designed along these lines for students in the Indian education system so as to afford them a chance to discover their true passion for meaningful and sustainable careers, while also adding to the country's human resources. Some 21 universities existed in India's professional training in 1947 and this continued with post-independence India's focus on engineering, technology, management and medicine. Now that the FLAME experiment in liberalizing Indian education is seen to be working, attention can be focused on the tougher question of how to achieve quality in education and attain indigenous and sustainable models of education.

The foundations of ESD in early childhood education

Ingrid Pramling Samuelsson, University of Gothenburg, Sweden

One of the most important questions today is how to educate the next generation for a sustainable society or a sustainable world. This is a question that implies environmental, economic and socio-cultural integration. Today we know that we (adults) use more than our fair share of the world's resources. This must change! But even though we are responsible for what we have failed to do, we need to educate the next generation to become better prepared for taking decisions towards ensuring that worldwide economic development is sustainable. The next generation has to be better prepared than our generation has been to revert from our unsustainable path of development and to meet the challenges of our society. For our children to have a good life in the future, we have to think of the future as beginning today, and in particular with their education in early years. So what kind of education are we talking about?

Image: Göteborgs universitet

Poster for OMEP's World Congress 2010

Working towards a sustainable world means getting our priorities right: justice, human rights and ethics, notions all included in democracy and the *UN Convention on the Rights of the Child.*[1] Wilkinson and Pickett claim: "The truth is that modern inequality exists because democracy is excluded from the economic sphere."[2] Democracy then becomes a key factor in education for sustainable development (ESD) and in the education of young children. This also includes knowledge of nature and ecology. Each of these notions is important in early childhood education and has been for a long time, but to make these aspects part of sustainable development means integrating them into the whole — that is, creating an education in which children become aware of how culture and nature are interdependent. In early childhood education terms this means, for example, focusing on life style questions related to production and consumption[3] — a theme that teachers could easily work with, with the aim of making the three pillars (environment, economy and the socio-cultural organization) meaningful and relevant to young children.

Let us begin far above the heads of children, where today there are a number of international agreements, such as Education for all, the Millennium Development Goals, the Literacy Decade, the UN Convention on the Rights of the Child and the Decade of Education for Sustainable Development (DESD), which all strive for a more just world, where boys and girls, rich and poor, people from South and North, of different ethnic origins, etc. have equal rights but maybe not equal opportunities. People's living conditions in terms of equality are strongly related to their health, well-being and educational success.[4] We also know from research that the first years of life are so important for each child's life in the future, not least for laying the foundations of an interest in other human beings and in nature.[5]

Work in the area of policy for ESD and young children

When Sweden hosted an international workshop on the topic of '*The Contribution of Early Childhood Education to a Sustainable Society*'[6] in May 2007, it was the first time ESD was related to early years education in a workshop at this level. This workshop was followed up one year later by a workshop where representatives from higher education, schools and teacher education, infor-

mal and non-formal education and early childhood education were able to reach general recommendations for ESD. At this workshop it was recognized that ESD is a question of life-long learning that has to begin in the early years. Furthermore, the Mid-Term Review of the DESD held in Bonn, 2009, recognized that early childhood education had not been taken into consideration when reviewing what had been done in this field.[6]

The Organisation Mondiale pour l'Éducation Préscolare (OMEP) was founded in 1948 as a professional non-governmental organization for early childhood education and peace education, but its mission and action plan is now devoted to ESD in early years. OMEP has produced a special issue on research in ESD and early childhood in the *International Journal of Early Childhood (2009)*.[7] An international interview study based on OMEP's motto ('World Congress 2010: Children — citizens in a challenged world'), is currently under way in more than 30 countries, which means that about 9,000 children from all over the world are involved.

A new world project based on activities with children involving some of the notions of the 7Rs (see below) will take place within OMEP next year and we believe it will provide many examples of good practice. A simple introduction to the field has, in fact, already been published in a small booklet for early childhood staff.[8]

Work with preschool children in the area of ESD

What does it mean then, to work with young children in the area of ESD? One approach is based on a number of notions (7Rs) that the practitioner is supposed to put into practice with young children.

The 7Rs are: respect, reflect, reduce, reuse, repair, recycle and responsibility. 'Reduce' is about reducing the consumption of food, materials and resources such as water, paper and plastic. This may include working with parents on the problem of children's exposure to advertisements promoting endless consumption. 'Reuse' is about showing children that materials can be reused for different purposes in preschool and at home. 'Recycling' can be encouraged by asking children to bring recyclable materials to school and integrating them into a range of activities. 'Repair' can be to take care of broken toys and other objects and repair them. 'Respect' is about nurturing understanding of and respect for nature and natural processes, and reducing the extent to which they are violated in many ways. 'Responsibility' can be to trust children to take care of something or be able to do something they can feel proud of; and 'reflect' is a habit and skill everybody will benefit from in working towards sustainability.

All these notions are easily recognized in everyday life with children. A lot of these things are carried out as part of preschool practice in many classrooms, for example, recycling. But it is not enough to simply do it; we also have to focus on communication and interaction to make children aware of how actions are related to a sustainable world, on a level they can make sense of.

Another example is work on the theme 'life', carried out with children ranging from four to six years of age in a Swedish preschool.

The theme of nature that children and teachers considered initially was "What is life?" The focus then moved towards hens and chickens, and the children asked, for example: "Why are there chickens in some eggs, but not in others?" They also asked how life could begin in a chicken. To find out about this, they decided to read books about it and ask someone they thought would know about this phenomenon. Many questions were posed by the children, such as: "Where does life come from?", "Why are eggs different from each other?", "Can a baby chicken have chickens?" and "Does the egg come out the same way as poo?" They also asked about the chickens' everyday life: "Can they go out?", "Can they fly?" and "How can they find the worms?"

From their own questions and from what they learned from their examinations, the children soon realised that chickens may live under a variety of circumstances. They found that many of them live in small, narrow cages without a place to sit, and have to stay indoors all their lives. The children wanted to know where the eggs they usually eat at school came from. When they were told that they came from chickens that were kept in small cages and unable to go outdoors, they got very upset. They decided to stop eating eggs. Together with their teachers, they went to the people responsible for the school's purchases with their protests and complaints about the way the chickens producing the eggs were treated. Their protest led to changes in the municipal authorities' and parents' purchasing habits – they started to buy ecological eggs from a place where the chickens could go out and live a good life[8].

Above we have an example of how children can take part in a search for knowledge that is related to nature, economy and social aspects of learning for sustainable development. Lifestyle has to do with what kind of eggs you buy, which is closely related to values. But it is also related to the economy, as organic eggs are more expensive, which may lead

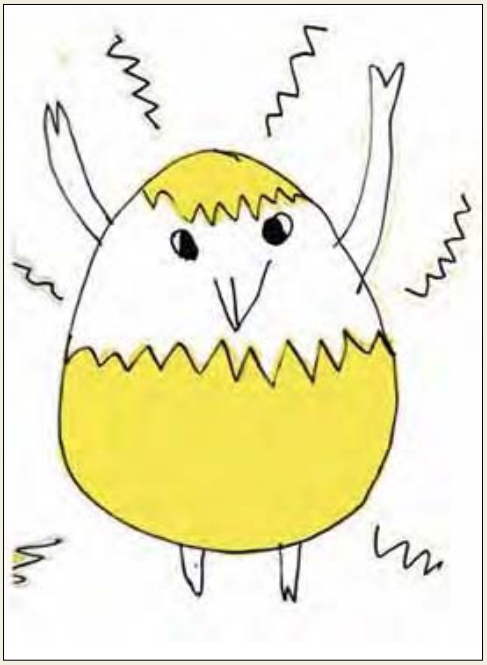


Image: Göteborgs universitet

"What is life?" Preschool project, Värmdö, Sweden

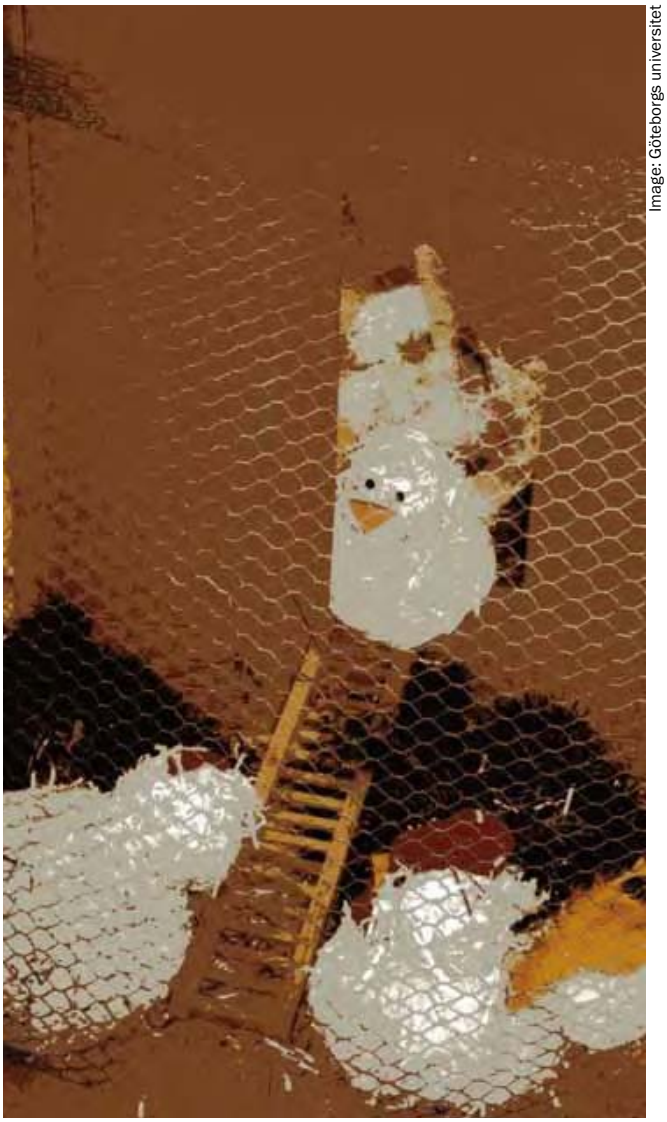


Image: Göteborgs universitet

Free-range ecological hens, indoors and outdoors. Preschool project, Värmdö, Sweden

to the children understanding that they may not be able to eat eggs as often if they cost more. Aside from this, children are also part of a democratic process where they are actively affecting something in their own lives. In particular, this is *not* about frightening children or telling them about disasters that we adults have caused, but about giving children a belief that they can influence events, solve problems and find out new things. It is, however, also about regarding children as capable individuals who want to learn and be creative.[9]

Begin today and influence young children

The experiences children meet in early years lay the foundations for later well-being and school success or lack thereof. The Effective Provision in Preschool Education project in the UK has clearly shown how the quality of preschool makes a difference with regard to children's later learning in school.[10] In a Swedish study on the quality of preschool and children's learning, it was shown that three-year-olds who have participated in preschools of high quality are more skilled in early mathematics, language and communication than their peers in preschools of lower quality.[11] Another study of how the differences in economic circumstances affect children's development found one year's difference in development between rich and poor children already in preschool.[12] The UNICEF (2008) report[13] comparing 25 OECD countries also refers to research showing how early childhood education can compensate for children's lack of experiences in the family. There is a lot of research supporting the idea of early education, not only for the individual child, but also for the development of the country.[14] This leads to the question: "Is it a better strategy, for the development of a country, to put money and competence into early childhood education for all children than into higher education for a few?" Twenty years from now, the children of today will be the adults running the world. "From the perspective of human rights and the rights of children, it is important that all children have the same access to quality provisions: early childhood education and care can make an important contribution in breaching the circles of poverty and discrimination."[15]

On the political agenda, we already have the many international agreements mentioned above. These international goals are more or less all related to children and to questions of importance for ESD. The education of young children is a key question for the world. Here again, the quality of this education must be stressed.[17] What, then, is the advantage of early learning?

First of all, it means that all children can have the chance to participate in early childhood education programmes with educated staff. The main focus of the programme should be ESD. This means that children's attention has to be directed towards questions of importance for ESD, like environment, consumerism and social relationships, aspects of ESD that can be worked on early in school. This also means focusing on democracy — as content and also as a way of working with children.[18] The children's participation and own actions are key features[19] that must be included when planning early childhood education of high quality.[20] Raising awareness of sustainability in nature and society must be key content even in the youngest age group.

Last but not least, high quality early childhood education programmes involve accepting children as individuals who make sense of their experiences in communication and interaction with other children and teachers. Or to put it another way, all children should have the opportunity to participate in formal early childhood education but with an informal approach to learning.[21] The title of this book, *Tomorrow Today*, applies more to the field of early childhood education and ESD than to any other field.

Transformative learning for a more sustainable world

Heila Lotz-Sisitka, Rhodes University, South Africa

Learning is almost as important as life. In fact, we could not live if we did not learn. However, for a long time people have been learning to do things that are unsustainable. For example, we learn that producing waste or building an economy that makes some people very rich and leaves others poor is normal. We learn that what 'I' want is all that matters, and that everything can be bought in a shop. We also learn to see only the good side of the products we buy, and we don't learn how our products are produced, or where, or what the conditions of production are. We no longer learn how to grow our own food, save and reuse materials, share what we have with others, reduce our impact or improve our relationships. We are learning in the wrong direction — and our planet is telling us that this needs to stop.

Schools, colleges and universities are dedicated to helping young and old to learn. Each day someone goes to school, college or university, they enter a place of learning, wanting to learn something new. But what is on offer? And how is learning structured? Is the kind of learning found in most schools, colleges, universities and training programmes providing the knowledge, values and skills needed for a more sustainable life?

Developing effective learning practices

In South Africa, the government has approved a National Curriculum Statement that requires all teachers to give attention to "the relationship between a healthy environment, social justice and inclusivity"[1] in all of their teaching practices. Focusing on this statement, a teacher in a school decides to focus some of her social studies lessons on waste. She tells the children a story about 'too much waste' and then asks them to go outside and collect waste. They put on some gloves (for safety) and collect the litter lying in and around the school yard. The teacher asks the children to sort

Image: Kate Davies

Children taking a break from picking up litter in their school

the waste, which they happily do. After that the teacher suggests that they build a small recycling station in the school, and that they make a poster about waste with the heading 'STOP WASTE'. Again the children do this. The lessons are over and the teacher moves on to the next topic.

A young researcher, interested in transformative learning and education for sustainable development (ESD),[2] visits the school. She talks to the teacher about the lesson, and asks the children what they have learned. The children tell her "Oh, we just picked up litter — it was boring." The researcher notices too that the children are not using their small recycling station. Passionate about ESD, the researcher is pleased that the teacher is focusing on waste — after all, this is a major local problem. But she is not so pleased about what the children have actually learned as a result. Could the teacher have done this differently? What could the children have learned that would make this learning 'transformative'?

The problem identified here by the researcher is a common problem. Often teachers expose learners to ESD topics or content, or even to interesting activities such as building a local recycling station and making a poster, but the learning that results is not transformative.

In Botswana, another young researcher visits some schools. She is also interested in ESD and transformative learning, and in how children are participating in waste management practices in the school.[3] The Botswana government has emphasized participation in ESD. Policies expect teachers to engage learners in participatory approaches to learning.[4] In a number of schools, the researcher observes teachers instructing children to clean up the school and to pick up litter. Teachers are pleased because the children are active and busy, picking up litter and keeping their schools clean. Interested in the views of the children, the researcher talks to them in great depth about how they participate in waste management practices in the school. She finds that the children are more concerned about the sanitation issues in their school than the litter. They want to learn how to solve the problem of poorly managed toilets, not pick up litter! The researcher sensitively engages the teachers and learners in dialogue, and soon after this, the children are being listened to by their teachers. The teachers and learners start to work out how the sanitation problems could be addressed, and a more participatory form of learning is established. It is also more transformative.

In a completely different context, another young researcher, also interested in transformative learning, is observing how community members in a poor rural community are learning how to commercialize beekeeping.[5] Commercialization of beekeeping has been identified by governments across southern Africa as a strategy to alleviate poverty in rural areas, and to develop entrepreneurship skills. In his observations the researcher notices that, while the intention is to support transformative learning, the manuals for the training have been developed only in English, which few of the adults involved in the beekeeping training can read. He is also puzzled by the fact that, even if there is economic benefit, some of the community members are not interested in the beekeeping practices they are being taught. After some time, he discovers that the trainers have failed to take local culture into account. In the particular area where he is undertaking these observations, people believe that bees are their ancestors and that it is wrong to put them in a box. The researcher, working with the trainer, engages the

Image: EcoSchools

Transformative learning involves meaningful participation where teachers are willing to listen to learners and engage in dialogue

Image: Kate Davies

Waste in and around schools

communities in discussions on this tension. Not surprisingly, the communities come up with some novel solutions to the problem and the learning process can progress. Most interesting, however, is that all three — the researcher, the community members and the beekeeper trainers — have experienced transformative learning. All of their assumptions have been changed by this interaction.

There are many other examples like this where ESD learning processes are set up and managed by teachers or learning facilitators. The aim is to support transformative learning, but the results do not always reflect this intention.

Towards transformative learning

So what is transformative learning? From the stories above, we could suggest that transformative learning requires learners to be engaged in 'why' questions, and questions about how practices can be changed. The children in the South African school could have been supported to ask questions such as:

- Why is waste created?
- Who is creating the waste?
- How can this be changed?
- What do we do if we are the ones creating the waste?

These are complex questions that force teachers and learners alike to examine ethics and values, why things are done the way they are, and most importantly, how practices can be changed.

Transformative learning also involves meaningful participation, in which teachers are willing to listen to learners and to other stakeholders, and to engage in dialogue. In the Botswana story, once the teachers were prepared to listen to the children, the lessons became more relevant to the children, the children were no longer just following instructions, but they were helping to develop solutions.

Transformative learning also involves giving adequate attention to language and culture in learning. The beekeeper training failed because the materials were not accessible to the learners, except via the facilitators' mediation, and because the facilitator had not taken the time to understand cultural practices associated with bees, before the training.

Transformative learning also involves engaging with complex tensions and difficult obstacles in the learning process, such as the problem experienced in the beekeeper training. Engaging with dissonance is an important feature of transformative learning.

Educational researchers, like the three referred to in the stories above, are working with teachers and learners to understand how transformative learning for a sustainable world can be strengthened. In Europe, researchers have been developing what they call an 'action competence' approach to support transformative learning.[6] In this approach, children are involved in asking 'why' questions, in formulating new visions of how things can be done differently, and in trying these out. In Latin America, researchers and teachers are focusing on the participation of children in environmental management practices in their communities. This work suggests that children need to be listened to, and be given the opportunity to develop solutions to problems, with support of adults.[7] In southern Africa, researchers and teachers are developing approaches to transformative learning that are culturally situated. Teachers are being encouraged to start their lessons with 'local story' as this helps to bridge the gap between existing knowledge, practices and cultural experience, and new knowledge and practices.[8] In Canada, methods are being developed to support teachers and learners to engage in critically examining and discussing the values and ethics embedded in their practices.[9] In the Netherlands, ESD researchers are developing approaches to transformative social learning that focus on engaging dissonance and diversity in the learning process.[10] This work, taking place across the planet, is encouraging, but more teachers, researchers and learners need to get involved.

While we are always learning something, it may not be transformative, and even if the intention is to learn about a more sustainable world, this does not necessarily result in transformative learning. Supporting approaches to learning that are transformative is a central focus of ESD, which would not exist without an interest in transformative learning. However, as the stories above suggest, transformative learning is not just about the topic being studied. It is the way that teachers teach that matters. Teachers need to focus on the 'why' question, encourage dialogue, engage learners in complex ethical discussions about what could be done differently, and consider language and culture in how they situate the lessons. They need to be prepared to engage with dissonance, and seek out solutions to issues and develop new, changed practices with learners. Only then can transformative learning result.

Notes and References

From Tbilisi to Bonn: an important journey in the historical context of ESD

1 An adjectival education is one that addresses a specific societal need that has arisen and is not dealt with adequately by the traditional core disciplines. The new specific issue to be addressed within the education system becomes the descriptive adjective that modifies the noun 'education'. There are more than a hundred such adjectival education topics and school systems have great difficulty dealing with these, as they often require a large amount of professional development on the part of teachers and other staff. Some examples are peace education, HIV AIDS education and environmental education.

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Promoting Earth System Science in Thailand

1 A record of GLOBE Thailand's work can be seen in the country reports available at *http://www.globe.gov/fsl/INTL/main.pl?ctry=TH&lang=en&nav=1*.

2 For additional information about these programmes, see: *http://www.globe.gov/fsl/INTL/contact.pl?ctry=TH&ndlang=enandnav=1 http://groups.google.com/group/thai-cloudsat-research?pli=1*.

3 *http://www.globe.gov/fsl/html/templ.cgi?thailand_2007andlang=enandnav=1*.

Vietnamese perspectives on ESD

1 As accounted for during the 2009 population census conducted by the General Statistics Office.

2 Vietnam Environment Protection Agency, *Báo cáo **Hiện trạng môi trường quốc** gia 2005* (*Report on the National Biodiversity Status*), Hanoi.

3 Nguyen Van Duc, Vice Minister of Natural Resources And Environment, in a speech at the Greater Mekong Subregion Economic Cooperation Program Second Environment Ministers' Meeting, Vietnam, 29 January 2008,

4 National Strategy for Environmental Protection to 2010 and Vision towards 2020 as enacted by the Prime Minister per Decision 256/2003/QĐ-TTg dated 02/12/2003.

5 Strategic Orientation for Sustainable Development in Vietnam, as enacted by the Prime Minister per Decision 153/2004/QD-TTg dated 17/08/2004.

6 Decision 248/QD-TTg dated 24/02/2009.

7 Prime Minister Decision 295/QĐ-TTg dated 11/11/ 2005.

UNEP's environmental education activities

1 Under the United Nations Decade of Education for Sustainable Development framework, UNEP's Environmental Education and Training Unit led the establishment of The Mainstreaming Environment and Sustainability into African Universities (MESA) partnership, an innovative university-focused partnership initiative for Education for Sustainable Development across the African continent. The MESA partnership involved UNEP, UNESCO and the African Association of Universities (AAU). Other partners included the Southern African Development Community (SADC), the Nile Basin Initiative (NBI), the Global Virtual University (GVU), Leadership for Environment and Development (LEAD), the United Nations University (UNU), the International Centre for Research in Agroforestry (ICRAF) and its network, the African Network for Agriculture and Agroforestry Education (ANAFE). This partnership supports MESA, creating a mechanism and supportive environment for universities to respond to environment, sustainable development and climate change challenges in Africa. Over the years, MESA has registered unprecedented success. It now has a membership spanning over 90 universities in Africa.

2 UNEP document, 'A strategy for positioning environmental education and training as a core service in POW 2010-2013', P4

3 Kenyatta University, Kenya and University of Gondar, Ethiopia

Child rights and equity through climate change education

1 The discussion of equity issues in this paper is based on the working draft of the UNICEF Education Section Equity paper, titled Sharpening the Equity Focus in Education. This working draft includes contributions from various members of the education section and consolidation.

2 Global Monitoring Report (2010). UNESCO.

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Perspectives on higher education for sustainable development: transformation for sustainability

1 See *www.ias.unu.edu/efsd/prospernet*. Members of ProSPER. Net:
Australia: RMIT University; China: Institute of Applied Ecology – Chinese Academy of Sciences (IAC-CAS) and Tongji University; India: TERI University; Indonesia: Universitas Gadjah Mada; Japan: Chubu University, Hokkaido University, Hosei University, Iwate University, Miyagi University of Education, Nagoya University, Okayama University, Rikkyo University, Shinshu University, University of Tokyo; Malaysia: Universiti Sains Malaysia; Philippines: University of the Philippines; Republic of Korea: Yonsei University; Thailand: Chulalongkorn University; Asia Pacific Region: Asian Institute of Technology and University of South Pacific.

2 Available from *www.ias.unu.edu/efsd/rce*

3 The COPERNICUS-CAMPUS initiative was launched in 1993 as a strategy to facilitate engagement of European universities in environmental education and research. By 2005, 326 universities had signed the COPERNICUS Charta, whose ten principles include institutional commitment, environmental ethics, education of university employees, programmes in environmental education, interdisciplinarity, partnerships, continuing education and technology transfer. For various institutional reasons, COPERNICUS-CAMPUS gradually became dormant.

4 Partners of the 3-Lensus project are: Charles University in Prague, Open University of the Netherlands, Karl-Franzens University of Graz together with the RCE Graz-Styria, Leuphana University of Lüneburg, University of Macedonia, and RCE Rhine-Meuse. More information on the 3-Lensus project is available at *www.3-lensus.eu*.

5 See *www.esd-world-conference-2009.org/fileadmin/download/MESA_input.pdf*

6 For example, a core peer-review process of the Times Higher Education Supplement relies predominantly on experts from North America, Asia and Europe. Only 10 per cent of its academic experts are from Latin America and Africa.

7 The ProSPER.Net AUA (Alternative University Appraisal) Project Mission Statement is as follows: 'Alternative University Appraisal seeks to facilitate and encourage institutions of higher education to engage in education and research for sustainable development and to raise the quality and impact of these activities by providing benchmarking tools that support diversity of mission, as well as a framework for sharing good practices and supporting dialogue and self reflection.'

Change for a better world: assessing the contribution of the DESD

1 This was the conclusion of Mulà, I. and Tilbury, D. (2009). A United Nations Decade of Education for Sustainable Development (2005-2014): What difference will it make? *Journal of Education for Sustainable Development*, vol. 3(1), pp. 101-111.

2 The First Global Report was released in October 2009. It is available from: *http://unesdoc.unesco.org/images/0018/001849/184944e.pdf*.

3 See *www.unesco.org/en/esd/* (Phase II of the Global Monitoring and Evaluation Process).

4 Tilbury (2010). *Assessing ESD Experiences during the DESD: An Expert Review of Processes and Learning for ESD*. Commissioned by UNESCO, Paris.

5 Prescott-Allen, R. (2002). *Wellbeing of Nations*. Island Press, New York.

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7 UNESCO (2005) and UNESCO (2009). Bonn Declaration, UNESCO.

8 Wals, A. (2009). *Review of Contexts and Structures for Education for Sustainable Development*. UNESCO, Paris.

9 These are documented in Tilbury (2010).

10 The term 'change' is used here in its broadest sense and refers to changing unsustainable practices that threaten culture; cultural diversity and quality of life.

11 The term 'change' is used here in its broadest sense and acknowledges that in some instances, the terms 'environmental preservation' or 'protection' would be most appropriate.

12 For example, Fien, J.; Scott, WAH. and Tilbury, D. (1999) *Education and Conservation: an Evaluation of the Contributions of Education Programmes to Conservation within the WWF Network*. Gland /Washington: WWF International &and WWF-US; Warburton, D. (2008). *Evaluation of WWF-UK's Community Learning and Action for Sustainable Living (CLASL)*. WWF-UK, Surrey.

13 It is acknowledged that ESD is not often a stand-alone project or effort. ESD can be a strand or component of a sustainable development initiative.

14 See Tilbury (2010)

Contributing to sustainable development

1 The UN definition of sustainable development (known as the Brundtland definition), Report of the World Commission on Environment and Development: Our Common future, available from *www.un-documents.net/ocf-ov.htm*.

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15 Available from *www.deewr.gov.au/Pages/default.aspx*.

Turning today's youth into tomorrow's leaders in ICT for development

1 The World Programme of Action for Youth (WPAY), adopted by the General Assembly, provides a policy framework and practical guidelines for national action and international support to improve the situation of young people around the world. The WPAY covers fifteen youth priority areas and contains proposals for action in each of these areas.

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9 Available from *www.unapcict.org/ecohub*.

Transformative learning

1 New Scientist, 18 October 2008, p. 40.

Education for sustainable development in higher education: the experience of Gulf universities

1 In recognition of the importance of ESD, the United Nations General Assembly declared 2005-2014 the UN Decade

of Education for Sustainable Development (DESD). UNESCO leads the Decade and has developed an International Implementation Scheme for it. The goals of the Decade are to provide an opportunity for refining and promoting the vision of, and transition to, sustainable development, through all forms of education, public awareness and training; and to give an enhanced profile to the important role of education and learning in sustainable development.

2 Spencer, J. (2010). An evolving definition of sustainability. *The Journal of Sustainability Education (JSE)*.

3 In 1981, six oil-producing countries from the Arabian Gulf States decided to form a union, now known as the Gulf Cooperation Council States (GCCS). The members of the council are Kuwait, Saudi Arabia, Bahrain, Qatar, United Arab Emirates and Sultanate of Oman. The main declared objective of the council was to maintain good cooperation ties between these states to achieve economic, social and environmental development. Massive oil revenues were spent on many development projects such as housing, water, health and sanitation. In consequence, the quality of life improved in comparison to the pre-oil era situation.

4 In addition to UAE, American university in Sharjah (AUS), University of Sharjah and Ajman University opened departments of design and architecture. AUS is the only institution that offers an MA degree in urban development.

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