



United Nations
Educational, Scientific and
Cultural Organization



Shaping the Education of Tomorrow

2012 Report on the UN Decade of Education
for Sustainable Development,
Abridged

Published in 2012 by the United Nations Educational,
Scientific and Cultural Organization
7, place de Fontenoy, 75352 Paris 07 SP, France

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ISBN 978-92-3-001076-8

This publication *Shaping the Education of Tomorrow: 2012 Report on the UN Decade of Education for Sustainable Development, Abridged* is a condensed, adapted and edited version of *Shaping the Education of Tomorrow: 2012 Full-length Report on the UN Decade for Education for Sustainable Development* authored by Arjen E.J. Wals, Wageningen University, The Netherlands, and commissioned by UNESCO. This abridged version was prepared by Cathy Nolan.

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Designed and printed by UNESCO

Printed in France

ACKNOWLEDGEMENTS

Our appreciation goes to Arjen Wals, UNESCO Chair in Social Learning and Sustainable Development, Wageningen University, The Netherlands, for reading hundreds of Monitoring and Evaluation (M&E) survey responses and other sources of information about Education for Sustainable Development and writing the 2012 Monitoring and Evaluation Report on the UN Decade of Education for Sustainable Development. His full-length report *Shaping the Education of Tomorrow: 2012 Full-length Report on the UN Decade for Education for Sustainable Development* is available on the UNESDOC database at <http://unesdoc.unesco.org/images/0021/002164/216472E.pdf> [Search the title.]

Our appreciation also goes to Cathy Nolan who prepared this abridged and edited version of the 2012 Report.

We extend our appreciation and thanks to the Monitoring and Evaluation Expert Group for their advice throughout the M&E process and their review of the documents related to the 2012 M&E report. The members of the group include: Abelardo Brenes, Rangachar Govinda, Alex Michalos, Yoshiyuki Nagata, Roël van Raaij, Overson Shumba, Konai Thaman, Pierre Varcher and Alcyone Vasconcelos. Special thanks go to the Chair of the group, Daniella Tilbury, University of Gloucestershire, United Kingdom.

We extend our gratitude to the Japanese Government for providing the financial support to the M&E process for the UN Decade of Education for Sustainable Development through the Japanese Funds-In-Trust for ESD (JFIT).



EXECUTIVE SUMMARY

As the lead agency for the UN Decade of Education for Sustainable Development (DESD, 2005 – 2014), UNESCO is responsible for monitoring and evaluating progress during the DESD. UNESCO is publishing three reports during the DESD – in 2009, 2012 and 2014. This second report focuses specifically on processes and learning in the context of Education for Sustainable Development

(ESD). What kinds of learning processes have emerged in the course of the DESD? What is the role of ESD in supporting them? What changes in ESD have occurred since the early years of the Decade? The report is informed by a broad consultation process that includes input from hundreds of policymakers, scholars and practitioners engaged in ESD around the world.

Findings

ESD is emerging as the unifying theme for many types of education that focus on different aspects of sustainability, (e.g. climate change, disaster risk reduction or biodiversity).

ESD is increasingly perceived as a catalyst for innovation in education.

Boundaries between schools, universities, communities and the private sector are blurring due to a number of trends. ESD is often at the heart of new, creative multi-stakeholder configurations involving these ESD stakeholders.

As ESD progresses, a co-evolution of pedagogy is

occurring. It appears that as the sustainability content of the curriculum evolves, pedagogy is evolving simultaneously.

More research is needed to document that ESD is quality education. Much anecdotal evidence exists that ESD is related to academic gains as well as boosting people's capacities to support sustainable development. Research will provide a solid evidence base and firmly establish that ESD is quality education.

Within the UN system, ESD's role is much bigger than it was two years ago.

Looking ahead

With the challenge of sustainable development as considerable as ever, recognition is growing that technological advances, legislation and policy frameworks are not enough. These need to be accompanied by changes in mind-sets, values and lifestyles, and the strengthening of people's capacities to bring about change.

A noticeable difference from the early DESD years is the private sector's interest in sustainability and capacity-building for a green economy. Some re-

spondents cautioned, however, that the P for Prosperity (or Profit) could dominate the other two P's of the "triple bottom line": the P for Planet and the P for People.

As the DESD goes into its final phase, it will be crucial for UNESCO, its Member States and other stakeholders to ensure that promotion, support and evolution of ESD continues beyond 2014.

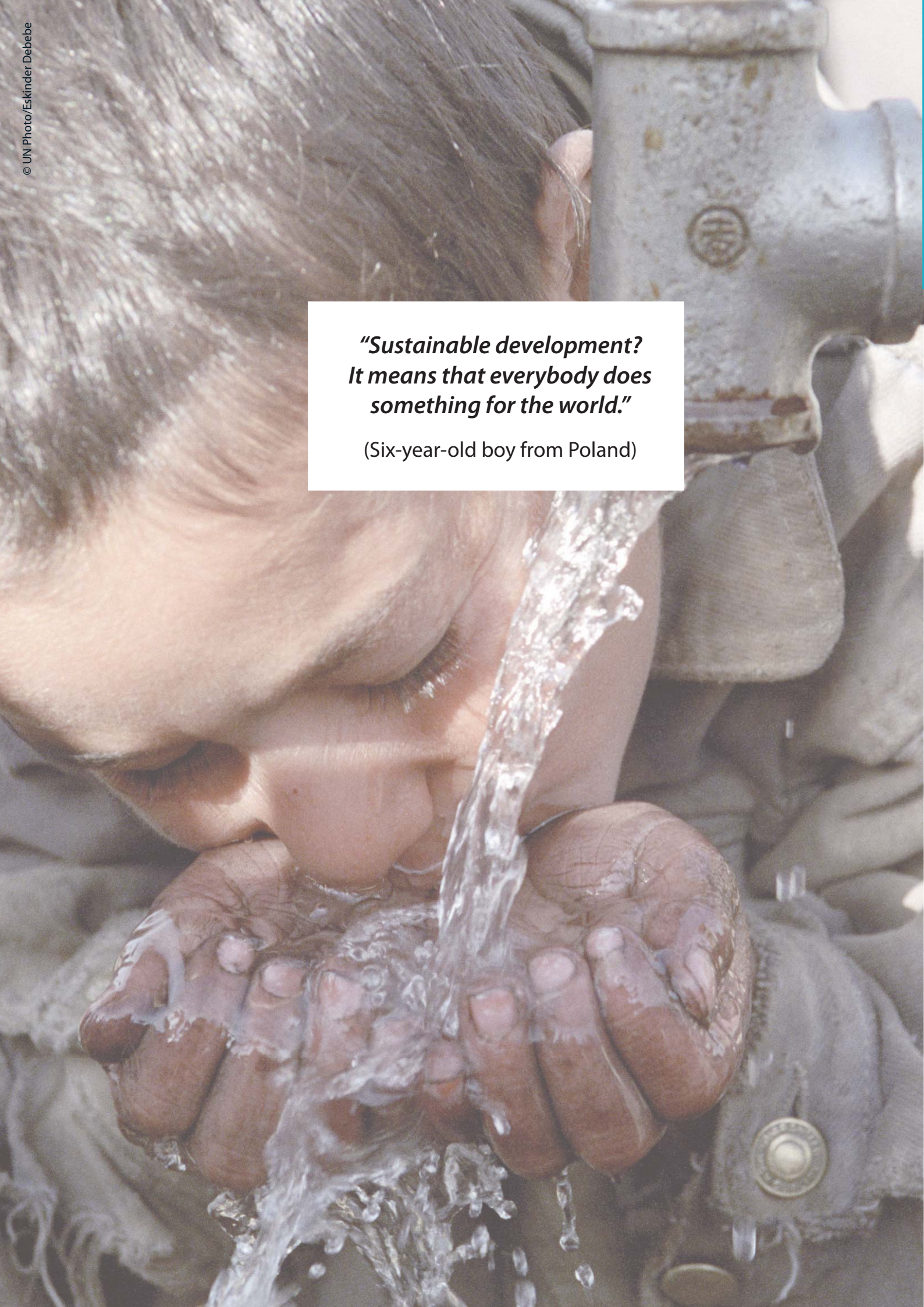


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***“Sustainable development?
It means that everybody does
something for the world.”***

(Six-year-old boy from Poland)



BACKGROUND



Introduction

In December 2002, the United Nations took on an ambitious task. It declared a Decade of Education for Sustainable Development (DESD, 2005-2014), naming UNESCO the lead agency for its implementation. The DESD promotes a more sustainable world through different forms of education, training and public awareness activities. It is an opportunity to rethink considerably our approach to global challenges.

The Decade is now in its eighth year. What difference is it making around the world? This publication presents highlights and key findings from the latest report on the DESD's progress: "Shaping the Education of Tomorrow: 2012 Full-length Report on the UN Decade for Education for Sustainable Development".

UNESCO is publishing three reports on the Decade, in 2009, 2012 and 2014, using relevant methodologies and indicators to gauge results.

The first report in 2009, "Learning for a Sustainable World: Review of Contexts and Structures for ESD", reviewed achievements at the halfway

point. (UNESCO, 2009a.) ESD, it concluded, was finding its place in education communities. Nearly 100 countries across the world had set up national coordinating bodies. Networks and structures existed in schools, universities, communities and the private sector to develop ESD, viewed as a relevant approach to global problems.

The second report, summarized in this publication, focuses on learning and learning-based change towards sustainability. What kinds of learning processes are emerging in the last stretch of the DESD? What is the role of ESD in supporting them? What changes have occurred since the early years?

The report includes input from hundreds of policymakers, scholars and practitioners engaged in ESD around the world. The evidence base was generated through Member State surveys, key informant surveys, regional synthesis reports, and case studies. Anecdotes, case study excerpts and reflections capture the richness and diversity of ESD in practice.



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The UN Decade of Education for Sustainable Development

Despite unprecedented economic growth in the 20th century, persistent poverty and inequality still affect too many people, especially those who are most vulnerable. Conflicts continue to draw attention to the need for building a culture of peace. The global financial and economic crises highlight the risks of unsustainable economic development models and practices based on short-term gains. The food crisis and world hunger are an increasingly serious issue. Unsustainable production and consumption patterns are creating ecological impacts that compromise the options of current and future generations and the sustainability of life on Earth. (Opening Statement, Bonn Declaration, generated by the participants of the UNESCO World Conference on Education for Sustainable Development) (UNESCO, 2009b)

The UN DESD promotes the vision of a more sustainable and more just global community through different forms of education, public awareness and training activities. It highlights the critical role of education and life skills programmes in enabling communities to create sustainable local solutions to problems related to poverty and vulnerability.

The DESD is intended to have broad scope and far-reaching effects. It offers national governments the chance to reorient education, training and even governance to enable everyone to view the

world through a lens of concern for sustainability.

While we can draw upon experiences of the past to solve the problems of today and tomorrow, the reality is that citizens of the world will have the task of learning their way towards sustainability. Education is therefore central to learning and to a more sustainable future. (UNESCO, 2012b)

The DESD is working to provide countries with opportunities to incorporate ESD into education reform efforts to contribute simultaneously to SD and educational quality by:

- facilitating networking, linkages, exchange and interaction among ESD stakeholders;
- fostering increased quality of teaching, learning, research and capacity building in ESD;
- supporting countries in realizing the Millennium Development Goals (MDGs) through ESD efforts;
- offering ESD as an umbrella concept for emerging educations (e.g. climate change, disaster risk reduction);

At the beginning of the Decade, UNESCO and countries around the world concentrated on further developing ESD and prioritizing strategies. In the second half of the DESD, the emphasis shifted towards achieving visible results. This is where we are today, twenty years after the 1992 Rio Earth Summit.

HISTORY

.....
1968 UNESCO Conference on Biodiversity
UNESCO organized the first intergovernmental conference to reconcile environment and development. It led to UNESCO's Man and the Biosphere (MAB) Programme. It was a significant step in the process that led to the United Nations Conference on the Human Environment. As a follow-up of this conference, the United Nations Environment Programme (UNEP) was established.

.....
1972 Stockholm United Nations Conference on Human Environment was the first major UN conference on environment and

development. The conference is recognized as the beginning of public and political awareness of global environmental problems. The conference produced a Declaration containing 26 principles concerning the environment and development; an Action Plan with 109 recommendations.

.....
1992 The roots of ESD and the DESD can be traced back to the **United Nations Conference on Environment and Development (UNCED)**, also known as the Earth Summit, held in Rio de Janeiro (Brazil).

The Earth Summit's landmark document, **Agenda 21**, mapped out a comprehensive plan of action to be taken globally to reduce human impact on the environment. Agenda 21 and the Rio Declaration on Environment and Development were adopted at the Earth Summit by more than 178 Governments. See: <http://www.un.org/esa/dsd/agenda21/>

UNESCO was designated task manager of **Chapter 36 of Agenda 21** on education, training and public awareness, with four overarching goals:

Promote and improve the quality of education: The aim is to refocus lifelong education on knowledge, skills and values citizens need to improve their quality of life;

Reorient the existing education programmes: From pre-school to university, education must be rethought and reformed to be a vehicle of knowledge, thought patterns and values needed to build a sustainable world;

Raise public awareness and understanding of the concept of sustainable development: This will make it possible to develop enlightened, active and responsible citizenship locally, nationally and internationally;

Train the workforce: Continuing technical and vocational education of directors and workers, particularly those in trade and industry, will be enriched to enable them to adopt sustainable modes of production and consumption. This includes a social component (e.g. equity, human rights).

September 2002: World Summit on Sustainable Development, Johannesburg. Global stakeholders reviewed the outcomes of the 1992 Earth Summit and made recommendation for future actions including, "recommend to the United Nations General Assembly that it consider adopting a decade of education for sustainable development, starting in 2005" (UN, 2002, para. 124 d).

December 2002: At its 57th session, the United Nations General Assembly adopted Resolution 57/254 that declared the period between 2005 and 2014 as the United Nations Decade of Education for Sustainable Development (DESD). UNESCO was named lead UN agency.

2005-2014: DESD, a decade for change

2007 The **34th session of the UNESCO General Conference** adopted a resolution on ESD recognizing that further substantial initiatives have to be taken by Member States and by UNESCO in order to reorient teaching and learning towards sustainable development worldwide.

2009 UNESCO's mid-Decade **World Conference on Education for Sustainable Development** in Bonn (Germany) was a major milestone, attended by about 50 education ministers and vice-ministers. The **Bonn Declaration** gave the world an action plan for ESD and outlined steps for implementing the remainder of the Decade. The knowledge, technology and skills already exist to turn around unsustainable development models, the declaration said. It was now imperative to act to bring about long-term change.

'In March 2009 I had the opportunity to attend the UNESCO World Conference for ESD in Bonn Germany One thousand representatives from 150 countries were together for three very intense days evaluating the progress of the Decade of ESD at its midpoint. No one could have left this gathering without feeling inspired to go home and do his or her best to promote ESD, and further this work. The Bonn Declaration was a call for action... for me; (Belton, 2012)

Immediately following the Bonn Conference, the Ministry of Education in Zambia undertook to:

- *develop a National Framework for the implementation of EE [environmental education] and ESD,*
- *integrate EE and ESD at all level of formal education,*
- *launch a National EE and ESD campaign,*
- *prod the University of Zambia to spearhead the implementation of EE and ESD,*
- *involve other line ministries, civil societies, Universities and NGOs to improve their working in favour of EE and ESD. (Report to UNESCO Chair on Reorienting Teacher Education to Address Sustainability, 2010).*

Other UN initiatives and reports recognizing the continued importance of ESD at the international policy level include:

The Human Development Report 2011: Sustainability and Equity: A Better Future for All, published by UNDP, mentions the role of ESD in promoting sustainable consumption;

The report of the United Nations Secretary-General's **High-Level Panel on Global Sustainability**, published in 2012, refers to the importance of ESD;

At the 36th session of the UNESCO General Conference, 68 countries explicitly supported ESD.

ESD is far more than teaching knowledge and principles related to sustainability. ESD, in its broadest sense, is education for social transformation with the goal of creating more sustainable societies. ESD touches every aspect of education including planning, policy development, programme implementation, finance, curricula, teaching, learning, assessment, administration. ESD aims to provide a coherent interaction between education, public awareness, and training with a view to creating a more sustainable future (UNESCO, 2012b).

In a dynamic world facing old and new sustainability challenges, ESD itself is on the move.



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► A decade in progress, a concept in motion

...in 2008, the proportion of countries evoking ESD or related fields in their development education programs is about 50%. In some cases, ESD is evoked or included as a theoretical frame without the evidence of inclusion on the curricula or project development. Education by itself is sometimes described as a tool for SD, without really including ESD. From a 50 country sample 26 countries reported no evidence of ESD in 2008, but by 2012 after the boost of the Bonn Conference in 2009, 16 of them fall no longer in that category.. We can perceive an estimate increase of 34% from 2008 to 2012. This allows us to have an approximation of the rate of adoption of ESD (IBE National Reports Analysis, 2012).

In a dynamic world facing old and new sustainability challenges, ESD itself is on the move. Now, in the second half of DESD, we can find a range of different interpretations, variations and expressions of ESD. There are some core components, however, that resurface across contexts and regions. Overall, ESD seeks to enable citizens around the globe to deal with the complexities, controversies and inequities rising out of issues relevant to environment, natural heritage, culture, society and economy.

Simply put, ESD is education for the future, for everyone everywhere. It is an essential ingredient to ensure quality education and a successful transition to green societies and economies.

At least four lenses of ESD can be distinguished:

An integrative lens – taking on a holistic perspective that allows for the integration of multiple aspects of sustainability (e.g. ecological, environmental, economic, socio-cultural; local, regional and global; past, present and future);

A critical lens – questioning predominant, taken-for-granted patterns that are or may be unsustainable (e.g. the idea of continuous economic growth, dependency on consumerism and associated lifestyles);

A transformative lens – moving from awareness to incorporating real change and transformation through empowerment and capacity building to lead to more sustainable lifestyles, values, communities and businesses;

A contextual lens – recognizing there is no one way of living or doing business that is the most sustainable everywhere and forever. We can learn from each other, but places and people around the world are different and times will change. Therefore, sustainability needs to be re-calibrated as realities change.

► The DESD Global Monitoring and Evaluation Report

It is a huge country, the quality and depth of work done varies greatly from state to state, province to province and from school to school (GMES, Brazil).

The DESD monitoring and evaluation process, guided by the Global Monitoring and Evaluation Framework (GMEF), is designed to measure the impact of the Decade using relevant methodologies and indicators (See: *M&E section at the end of this chapter*).

The first DESD Global Monitoring and Evaluation Report on contexts and structures for ESD was published in 2009, after the first five years of the Decade. It examined policies and mechanisms set up by countries around the world to implement ESD and noted a “rapid” and “remarkable” rise in ESD presence on national and international agendas. See: http://www.unesco.org/education/justpublished_desd2009.pdf

This second report is based on a literature review (Tilbury, 2011); a Global Monitoring and Evaluation Survey (GMES) sent to all Member States (see Appendix 2); an Internal UN Review of ESD (UNIR), a number of UNESCO-commissioned Country-based Case Studies on ESD (CS), a Key Informant Survey (KIS), eight UNESCO-commissioned reports on National ESD Journeys and, finally, input from the UNESCO Chairs who specialize in ESD.

The report looks specifically at processes and learning in the context of ESD.

In the literature review, for which Daniella Tilbury reviewed approximately 200 articles to understand trends, innovations, and growth in ESD, **learning** refers to:

- learning to ask critical questions;

- learning to clarify one’s own values;
- learning to envision more positive and sustainable futures;
- learning to think systemically;
- learning to respond through applied learning; and
- learning to explore the dialectic between tradition and innovation. (Tilbury, 2011, p.8)

This interpretation of learning, the literature review notes, goes beyond the gaining of knowledge, values and theories related to sustainable development.

Key processes underpin ESD frameworks and practices:

- processes of collaboration and dialogue (including multi-stakeholder and intercultural dialogue);
- processes which engage the ‘whole system’;
- processes which innovate curriculum as well as teaching and learning experiences;
- processes of active and participatory learning. (Tilbury, 2011, p.7)

Clearly as the DESD progresses the concept of ESD is not static; it continues to adapt and change to accommodate the shifting demands of our time. In this report, these changes and adaptations are highlighted as they are illustrated by a wide range of projects, networks, country case studies including ESD National Journeys and initiatives from around the globe.

This report tries to capture these multiple forms of learning and stakeholder interaction by describing them and giving examples. These multiple forms of learning transcend country borders and regions, with great variation within countries and regions as well.

Report objectives

The purpose of this report of ESD learning and processes is to highlight trends in education and learning around the globe that show the potential and the challenges of ESD at all levels of education and in other less formal learning contexts (e.g. communities and businesses). The purpose is not to rank, label or judge countries or regions.

The report seeks to strike a balance between the universal (to generate general guidelines that can be used in other contexts) and the contextual (to do justice to local realities, histories and political contexts). The report recognizes that all countries have their own unique challenges, perspectives and histories, all of these affecting the way ESD is perceived and implemented.

Reviewing a UN Decade in progress is highly complex, considering the geographical scope (the globe) and the time-frame (10 years). The level of ambition is also very high: the DESD seeks to affect multiple levels of governance and to engage multiple stakeholders, including marginalized ones. Yet one thing is certain: across the world, people are indeed engaged in ESD.

The report sketches the educational landscapes and learning contexts that are emerging around the world as schools, communities, businesses and NGOs everywhere seek meaningful methods and work actively to engage everybody in sustainability. Trying to prove that this engagement is the result of the DESD is not the goal of this review.

Outline of the report

- Chapter 1 presents various meanings and variations and expressions of ESD and their connection to other educations concerned with the wellbeing of people and the planet.
- Chapter 2 focuses on forms of teaching and learning that are gaining traction in the second half of the DESD. The second part of Chapter 2 visits different learning contexts for ESD: Early Childhood Care & Education (ECCE), Primary Education, Secondary Education, Higher Education, Technical and Vocational Education & Training (TVET) and Non-Formal Education. Learning in the private/commercial sector has been connected to the section on TVET.

- Chapter 3 focuses on the emergence of new partnerships in support of ESD. It highlights processes of multi-stakeholder action that seek to create systemic change. Such multi-stakeholder interactions cannot be confined to one particular ESD context. They tend to be cross-boundary: they involve people representing different sectors in society and are not confined to one particular form of learning. The second part of Chapter 3 focuses on the growing 'whole system engagement' approach to ESD.
- Chapter 4 closes with key findings and suggestions for the way forward to the end of the DESD and beyond.
- Appendix 1 highlights the UN contribution to the DESD, particularly UNESCO's role.



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MORE ON THE M&E PROCESS

The Decade of Education for Sustainable Development is guided by an International Implementation Scheme (IIS), which provides a broad framework for contributions. It defines the DESD's goals and objectives and its relationship to other key campaigns such as the Millennium Development Goals (MDGs), Education for All (EFA) and the United Nations Literacy Decade.

Monitoring and Evaluation (M&E) is one of seven strategies in the IIS. It underlines the importance of developing indicators at every level – from local to international – for all DESD initiatives. A Monitoring and Evaluation Expert Group (MEEG) of international ESD experts provides support to UNESCO (See Appendix 3).

The Decade's M&E is conducted within the Global Monitoring and Evaluation Framework (GMEF) designed by the expert group. After its first meeting in 2007, the expert group recommended that UNESCO publish three DESD implementation reports:

2009: Contexts and structures

2012: Processes and learning

2014: Impact and outcomes of the DESD.

Phase I of the review focused on structures, provisions and policies put in place by Member States during the first half of the DESD to support the development of ESD.

This report and the companion literature review (Tilbury, 2011) represent the key outcome for Phase II, focused on processes and learning.

- 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.

Learning is approached from two perspectives: 1) learning as it engages people, young and old, in formal, informal and non-formal settings, in sustainability issues and 2) learning as it enables various stakeholders at various levels to create better opportunities for ESD and to begin to re-orient entire systems (e.g. schools, communities and companies) towards ESD.

The specific objectives of Phase II of the DESD M&E process are:

- *to determine what constitutes processes and learning for ESD;*
- *to identify who is involved in the processes & learning for ESD;*
- *to identify types, levels and settings of education – formal, non-formal and informal, where the processes and learning for ESD are taking place;*
- *to emphasize the processes that synergize formal, non-formal and informal learning;*
- *to determine what the processes for ESD aim to achieve – whether the processes have normative aims (for example, including ESD in curricula) and/or learning aims (for example, increase and enhance the awareness of ESD and capacity-building of stakeholders).*

The review also looks at changes and trends in ESD engagement within the UN system itself.

DATA

- To focus on the actual learning taking place in schools, universities, communities and workplaces, as well as on the processes used to engage multiple stakeholders in supporting ESD, a range of data sources were used to get a more complete picture of what is happening on the ground. They include:

Literature review - In 2010, UNESCO commissioned an expert review on processes and learning for ESD. The resulting report (Tilbury, 2011) identifies which commonly accepted learning processes are aligned with ESD and can be promoted through ESD-related activities. It also examines which learning opportunities contribute to sustainable development, providing an important entry point and backdrop for this report.

Global Monitoring & Evaluation Survey (GMES)

- An on-line survey was created and sent to UNESCO National Commissions of UNESCO Member States to get a better sense from countries of the various types of learning employed and/or emerging under the ESD umbrella in the various educational sectors (from Early Childhood Education to Vocational Education and Training to Community-based and Corporate Learning) at the national level. Respondents could also identify obstacles and opportunities regarding ESD development in their country, with the option of more open-ended narrative responses. In total 216 respondents from 102 countries participated in the survey. Many countries returned multiple surveys covering multiple education sections. UNESCO regional offices used the surveys to write regional synthesis reports, providing more input for this review. In some cases, consultants or bureau staff members writing the reports engaged in further telephone, email and internet research.

Case studies (CS) – All five UNESCO Regions provided learning-based case studies: Arab States (2), Africa (2), Asia Pacific (2), North America Europe (2), and Latin America Caribbean (4). Using a template, these looked at learning and processes in ESD programmes and at changes over the last five years.

National ESD-journeys (NESDJ) – Eight detailed reviews from countries in different regions of the world. These National Journeys were commissioned to give an overview of ESD at the national level. The chapters have a specific format that includes one section on learning and processes.

Internal review of ESD contributions by various UN agencies (UNIR)

- UN Agencies involved in ESD and connected through the Inter Agency Committee (UNECE, UNCCD, UNEP, UNICEF, UN-Habitat, UNESCO, and UNU) filled in ESD surveys. They described their contribution to ESD and their links with other UN Agencies to strengthen and/or use ESD to achieve their own educational and sustainability-oriented tasks. In a focus-group discussion with some of the agencies (including UNICEF, FAO, UNEP, UNECE, UNU, UNESCO, UNCCD, UNCBD and UN-Habitat) these responses were rearticulated and shared.

Key Informant Survey (KIS)

- Key ESD informants around the world represent a range of local, regional, national and trans-national organizations active in ESD. They included international and national NGOs as well the DESD Reference Group, an advisory body to UNESCO. Forty-four key informants received the KIS electronically. The letter requested that the recipient “query the members of their organization” to complete the questionnaire so that the response would be more broadly informed than a perspective of one individual. A number of organizations returned more than one response to the questionnaire.

Reports from UNESCO ESD-Chairs

- two consultations took place among the UNESCO Chairs engaged in ESD: they consisted of an informal on-line questionnaire initiated by the global report coordinator, and one more formal on-line questionnaire commissioned by UNESCO’s ESD section.

Appendix 2 shows an overview of the data used and the countries and UN agencies that contributed.

An aerial photograph of a city, likely Seattle, showing a dense urban area with a mix of high-rise buildings and lower residential structures. The city is situated along a large body of water, with a prominent bridge crossing the water in the foreground. The sky is overcast with grey clouds.

*The report seeks to strike
a balance between the universal
and the contextual.*

© UN Photo/Basile Zoma

LIMITATIONS OF THE GLOBAL MONITORING AND EVALUATION PROCESS

- The Global Monitoring and Evaluation Framework was developed to assess implementation of the DESD. In reality, it is more likely to capture the changes occurring during the ten-year period marked by the DESD, and not just initiatives developed under the DESD label.
- Using a universal template and questionnaire promotes uniformity in reporting and helps make sure all respondents report on the same ESD components and issues. Yet despite a glossary of key terms, it is clear from the data that not everyone grasps concepts in the same way. Even within the same country, organizations or officials may have different understandings of “problem-based learning” or “multi-stakeholder engagement”.
- While the surveys (i.e., of Member States, Key Informants and UN Agencies) were intended to encourage broad consultation, this process did not always take place. In some participating countries, a number of people with specific ESD knowledge interacted to produce responses, thereby strengthening their validity. In others, however, data were not validated by multiple sources. Furthermore, the involvement of NGOs, considered key players, and youth is underreported, whereas much of the data coming from UN related sources is from UNESCO Headquarters and Field Offices.

ESD in a Changing World

Countries most at risk of climate change may be more readily willing to include disaster risk reduction (DRR) and climate change education (CC) in their national education strategies compared to other countries. ESD is also less seen as a separate form of “education” and more easily mainstreamed in educational strategies. Finally, an increasing number of actors recognize the value and necessity of ESD work... (UNIR, UNICEF).

► Positioning Education for Sustainable Development

Many of the new learning forms and processes discussed in this report in relation to ESD take place in contexts that may not be named ESD but bear a strong family resemblance. Obviously, ESD does not operate in a vacuum. ESD relates to major UN-supported education campaigns such as Education for All (EFA) and the UN Literacy Decade (UNLD) but also to a whole range of other educations that touch upon SD.

ESD-related ‘adjectival’ educations include: environmental, peace, human rights, consumer, development, health, HIV/AIDS, biodiversity, gender, inclusive, multi-cultural, holistic, global, citizenship, disaster risk reduction (DRR), climate change (CC) and for food security.

UNESCO’s actions on biodiversity are infused with education, communication and capacity-building activities, with priority to development of specialist skills in science, policy, awareness and outreach. From our survey data 59% of the countries have implemented action on Biodiversity Education. These efforts are included in almost every educational level and modalities. From countries taking action in Biodiversity Education, 95% include it in primary education, 100% in secondary education, 83% in higher education, 85% in teacher education, 73% in TVET and 48% in non-formal education (Email Survey).

In the United States of America Climate Change education has become a more consistent offering. Efforts by state and local governments, universities, schools, and NGOs are essential complements to federal programs that educate industry and the public regarding climate change. State environment and energy agencies continue to provide teacher training, often in cooperation with universities and local utility companies. Local school systems are adopting climate change curricula and activities at the middle and high school levels. Universities are joining forces with NGOs to educate staff and students about the importance of energy efficiency and are instituting new, sustainable practices on campuses across the country. From wildlife conservation groups (e.g., National Wildlife Federation, National Council for Science and the Environment, National Environmental Education Foundation, and Council of Environmental Deans and Directors), to science-based organizations (e.g., American Meteorological Society, University Corporation for Atmospheric Research, and Federation of Earth Science Information Partners), to education organizations (e.g., American Association for the Advancement of Science Project 2061, Association of Science-Technology Centers, and National Science Teachers Association), a variety of NGOs conduct programs and surveys, produce brochures and kits, and write media articles to alert the public to the science underlying, impacts of, and possible solutions to climate change. (GMES, USA)

The emergence of Climate Change Education in the United States (GMES, USA)

On 29 March 2005, in the DESD's first year, a Google search for "Education for Sustainable Development" came up with 89,000 websites. On 29 January 2009, after almost four years, the same search yielded 215,000 websites. On 28 January

2012, it found 1,550,000 sites: over 7 times the number found in 2009 and over 17 times the number in 2005. (Of course, this rapid growth is also a result of the spread of digitalization in all fields.)

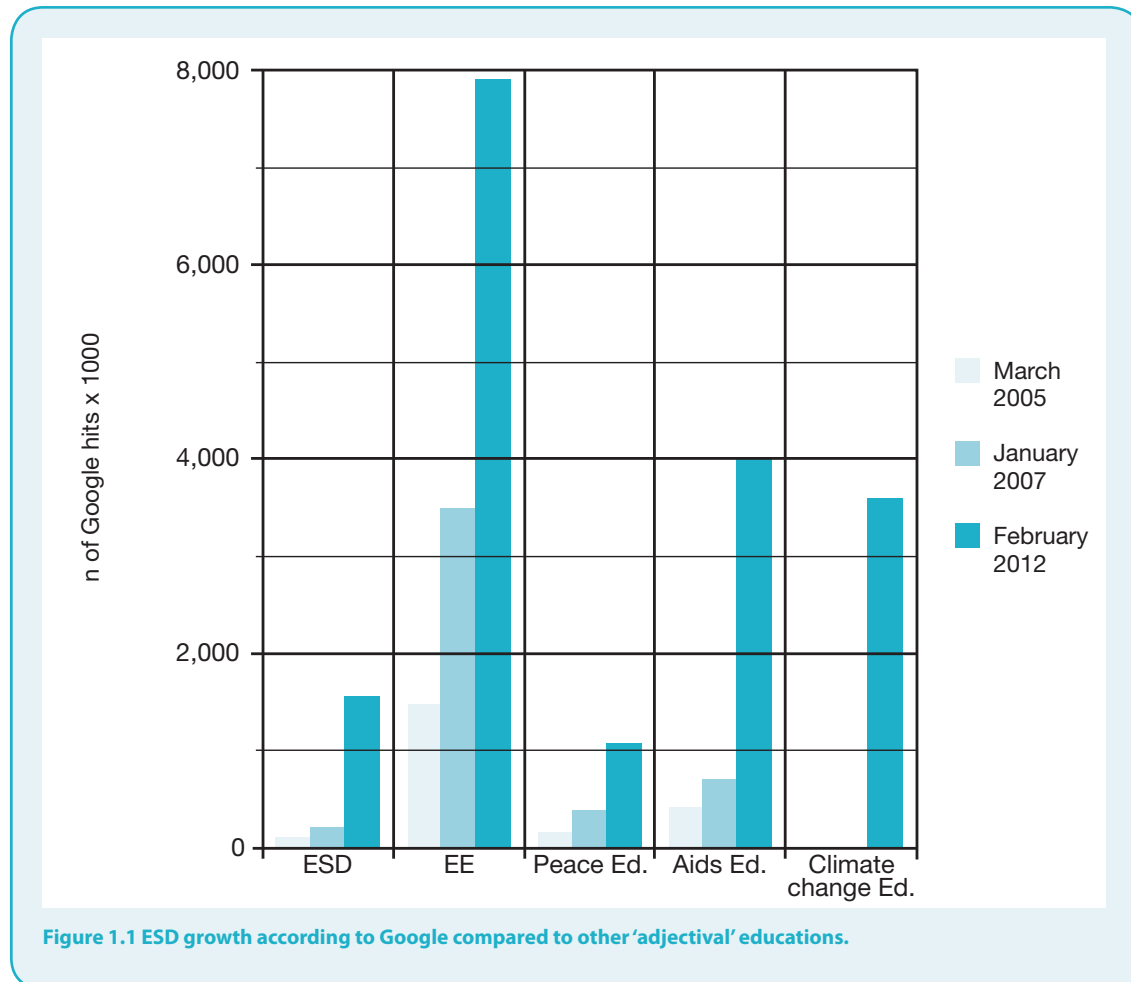


Figure 1.1 ESD growth according to Google compared to other 'adjectival' educations.

The biggest growth field in ESD is ESD related to climate change. Many governments are developing educational responses to climate change and natural disasters, especially in countries most at risk. In the table above, CC is shown as the subject of 3.6 million websites, a remarkable number considering CC's short history compared to Environmental Education (which has existed since the 1960s) and AIDS education.

The National Environmental Education Action Plan (2005-2014) mandates the integration of environmental education in the school curricula at all levels. Further, the Department of Education has developed educational materials and conducted teacher training in pilot areas following the mandates of the Climate Change Act of 2009 and the Disaster Risk Reduction and Management Act of 2010 (GMES, Philippines).

UNESCO's actions on biodiversity are infused with education, communication and capacity-building activities.

Climate change education is being mainstreamed into school curricula. The introduction of climate change education includes the science of climate change, the social and human aspects, policy responses and sustainable lifestyles among other issues. From the M&E data, 59% of the respondent countries report action on Climate Change Education. At the different educational levels or modalities, 35% of those countries have action in primary education, 50% in secondary education, 80% in higher education, 88% in teacher education, 60% in TVET and 56% in non-formal education (Email survey).

► Meanings and interpretations of ESD

“The progress of ESD remains unevenly distributed and requires different approaches in different contexts.”

Bonn Declaration (UNESCO, 2009).

As noted in Chapter 1, ESD is interpreted in different ways around the world. In the second half of the DESD, there is less push for a uniform view of ESD that can be prescribed to all countries and regions. Instead there is more recognition of the need for locally relevant interpretations, learning processes and change mechanisms.

Bansunkong draws upon the “Sufficiency Economy” philosophy of Thailand’s King Bhumibol Adulyadej as a foundation and common-cultural reference point for its ESD processes; however it also draws upon the traditional knowledge and practices of the Akha people where possible. In particular, both wisdoms are reflected in the school’s applied agricultural science programme, and are used as inspiration for the development of solutions to sustainability issues of local concern as part of the CSA activities. The school also focuses upon the Akha’s cultural heritage within its arts subjects, and makes use of Ahka performance arts within the CSA as a means of increasing the effectiveness of community outreach and consultation efforts. This use of common cultural reference points, as with the school’s pedagogy based on applied participatory teaching and learning, has succeeded in making an education seem more relevant to the circumstances of, and thus of more value to Bansunkong’s students and the local community. In this way, Bansunkong has succeeded in increasing students’ and parents’ enthusiasm for education, with consequent impacts upon attendance and completion rates (CS, Basunkong School, Thailand).

In many responses on the nature of ESD, there are references to the importance of consumer education and the need to encourage values other than material ones.



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The Partnership for Education and Research about Responsible Living (PERL) is an international network of experts, researchers, teachers and policy-makers (from over 140 institutions in more than 50 countries) that encourage people to contribute to constructive change through the way they choose to live. PERL is based on six years of experience under the Consumer Citizenship Network. PERL develops educational approaches which are values-based, holistic, interdisciplinary, active, personal and practical (KIS, Norway).



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Learning for sustainable development enables everyone to get back into complex and changing society by appropriating the mechanisms of thought and action, allowing it to understand the interactions between the local and the global perspective of the consumerist approach, based on our materialistic society and to envisage a lifestyle grounded on ethical conduct involving equality and solidarity (UNESCO Chair Report, France).

The Centre for Environment Education (CEE) in India has run the campaign “CO2 Pick Right” on climate change and individual lifestyle choices in over 70,000 schools in India. Centre for Environment Education, CEE was created in recognition of the importance of environmental education in India’s overall environment and development strategy. The result is a unique partnership between government and a non-governmental institution. The programme made it possible to raise awareness on the importance of choices and daily practices for sustainability (Centre for Environment Education, India). See: http://www.cceindia.org/cee/pick_right_cce.html

► The ‘E’ in ESD

Without a doubt the biggest change [that has occurred since the start of the DESD] is a result of including the issue of “quality education” as a major part of the discussion. The discussion of quality has moved ESD from the realm of another adjectival to the heart of the education reform debates (UNESCO Chair Survey, Canada).

This report focuses essentially on the ‘E’ in ESD while recognising that the meaning of SD varies around the globe. There is no universal consensus on how to become more sustainable. Yet in various educational contexts and within UN agencies supporting ESD, we see new emphasis on the capacities and skills people need to create a more sustainable world. The question of what are the appropriate learning processes for developing these qualities in citizens, young and old, is now part of the conversation.

This is a key change since the early years of the DESD.

The way we learn is equally important to what we learn; process is just as important as content; theory is meaningless without practical applicability in real people’s lives. A revolution is underway within learning communities, a revolution with many new names: Liberational Pedagogy, Relational Learning, Partnership Education, Transformative Learning, Experiential Learning, Action Learning, And there is the Living and Learning Pedagogy promoted by Gaia Education. One central motive that all these pedagogies – that is, principles and methods of instruction – have in common is an effort to make the educational process directly relevant to people’s lives, to focus learning on the solutions to real problems that people are experiencing (KIS, United Kingdom).

Underlying is a basic question about education itself: Is education above all about social reproduction or about enabling social transformation? This question is not answered the

same way everywhere, and educators therefore have different visions of how the educated citizen interacts in society.

The way that education, especially formal education, is interpreted and implemented clearly has implications for the way ESD is interpreted and implemented. The amount of space allowed for participation, self-determination and autonomous thinking influences the kind of ESD that emerges or is possible.

When this space is narrow, more transmissive and teacher-centred modes of ESD tend to prevail. Such approaches may have advantages in reaching greater numbers of people but may be limited in their ability to engage them meaningfully in sustainability challenges.

When this space for participation and democratic involvement is wide, more interactive, student-centred and transformative modes of ESD are likely to emerge. These modes tend to emphasize *capacity-building* and *empowerment* over behaviour change (UNESCO, 2011a). The transformation-oriented learning and capacity-building ESD relies more on participation, self-determination, autonomous thinking and knowledge co-creation.

As the DESD progresses, there appears to be increased awareness that ESD must move beyond transmission modes of ESD towards transformative modes. The ESD principle that each individual should have a chance to participate in local and global discussions about our common future is highlighted more and more. Learning is seen as a key component of innovation that leads to social change.

The Spring Seeds Project considered the reality so that it could promote child participation in the democratic management of the school and community's environment. The starting point for all activities was the life of the children and their relatives, taking into consideration their habits, cultures, identities, and pertaining dynamics. We pursued the union between theory and practice, thus straightening the link between what one does and what one thinks about what one does. This philosophy of Paulo Freire constitutes a major contribution of the countries of the South in their exchanges with those of the North. Imagination, creativity and passion to recreate the world which is embedded in the children are also essential for the qualification of ESD. They contain ways of feeling which have not yet been formatted: they are connected to the future in a way no adult is (CS, Brazil).

Reorienting education to address sustainability requires understanding local contexts, including traditional knowledge and ensuring democratic participation (UNIR).



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I have seen a greater participation of civil society due to the strengthening of the relationship between school, family and community (UNIR, Cuba).



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Community ownership of education could be achieved by empowering populations from the grassroots level, by reaching out to the marginalized, paying special attention to women and girls. More generally, education and life-long learning are key to empowering youth and adults to become responsible citizens actively contributing to building a culture of peace and to sustainable development. To this effect, Member States should develop and apply guidelines, teaching and training materials, including for teachers, designed to mainstream the respect for human rights, solidarity, honesty, peace and democracy (UNESCO Leaders' Forum, 26-27 October 2011).

In Ukraine we decided to create a new, integrative and inclusive curriculum for ESD, rather than offering additional material for existing school subjects: and to implement it within the current model of state school.

Ukrainian educators, like those in many other countries, are used to linking SD with the sphere of natural science. And there is certainly something in this. For example ESD students can definitely benefit from their classes in chemistry (composition of water, air), physics (measuring of energy and power intensity), biology and other knowledge about nature. However, ESD also demands great attention to social aspects, because a sustainable society cannot function without democracy, on-going dialogue, participation and the empowerment of people – individuals and groups. Also SD is only possible when human relationships are based on respect, tolerance and intercultural cooperation, so from the perspective of the standard school curriculum this is already 'social studies' and even social psychology, social 'engineering', or even philosophy (Mehlmann, McLaren and Pometun, 2010).

UNESCO's 2011 Leaders Forum also concluded that **youth as the "democratic pulse of today's world"** must be empowered as actors for peace and inclusive sustainable development, using the new internet communication tools. The UNESCO Offices in Beirut and Doha echo this idea:

The focus is on youth involvement in ESD/DESD and the uses of their experiences in community development (UNIR, UNESCO Regional Bureau of Education, Beirut).

The increased use of the internet, and its ability to spawn large voluntary networks at very low cost, can create low cost knowledge networks and peer reviewed content suitable for wide distribution (UNIR, UNESCO Field Office Doha).

Yet there is still a need for more traditional, directive approaches and tailor-made ESD materials that can easily be adopted by teachers in primary and secondary schools, for instance. Many teachers work in education systems with mandated curricula and textbooks. ESD resources may have to be authorized by governments before they can enter the formal education system.

In Mongolia, UNESCO supports the Government's efforts of mainstreaming ESD in education system through curriculum development and ESD institutionalization in teacher education. A course outline on ESD targeting prospective teachers attending the State University of Education, and a learning resource book has been developed. Based on relevant modules and key resources provided in the UNESCO ESD Lens, an ESD training handbook for education planners and managers has been developed and disseminated to relevant departments in the national and local governments, universities of education, UNESCO ASP Net schools and education research institutes (GMES, UNESCO Field Office Beijing).

ESD resources may have to be authorized by governments before they can enter the formal education system.

China's "Environment, Population and Sustainable Development for Education" (EPD-ESD) Programme, an initiative of the Beijing Academy of Education Sciences, UNESCO, and the Chinese Ministry of Education, seeks to: "demonstrate the role of education in facilitating sustainable development; to build young people's scientific knowledge; to increase their learning capacity; to impart upon them the values and lifestyles required for sustainable development; to teach students more about energy conservation, environmental protection and cultural diversity; to expand the construction of energy-efficient and emission-reducing schools; and to engage students in activities that mitigate social, economic, environmental and cultural problems for sustainable development" (Gendong, 2010: p.2, quoted in (CS, China).



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At the same time, the main issue is not, or is no longer, a lack of ESD materials.

“There is an increased availability of information related to ESD – whether in the form of manuals, lesson plans, websites, campaigns, information groups, etc. While five years ago, partners may have claimed a lack of resources/information, this is no longer the case. The challenge now is adapting the materials to the local contexts and leveraging the support of local authorities” (UNIR, UNICEF).

Young people using ICT tools to make their voices heard are creating much of the momentum.

► Summary Notes

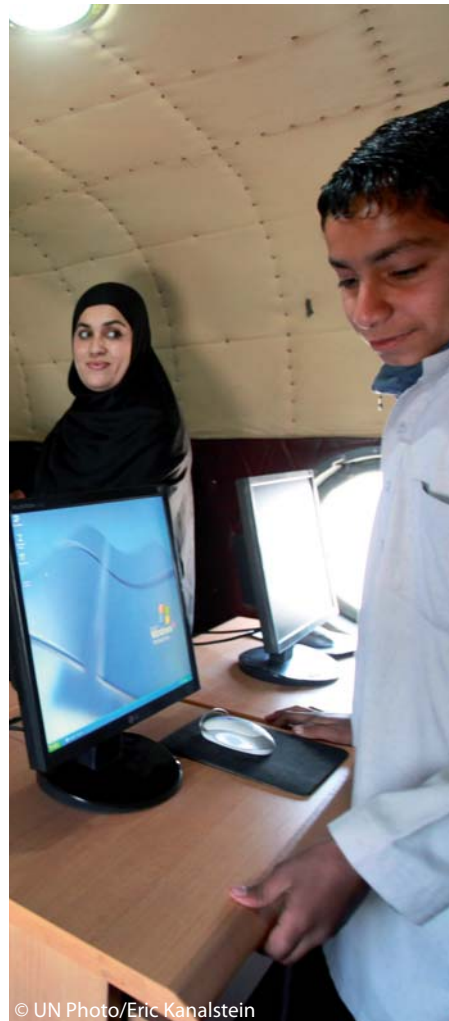
In various educational contexts and within UN agencies supporting ESD, we see new emphasis on the capacities and skills qualities people need to create a more sustainable world.

ESD is interpreted in different ways around the world, according to context. Because no universal formula for sustainability exists, there is growing recognition of the need for locally relevant interpretations, learning processes and change mechanisms.

Top-down and instrumental approaches to education, teaching and learning prevail in many education systems, and can be effective in reaching large numbers of people. Yet spaces are opening up around the world for more process-oriented, transformative approaches to ESD that require higher levels of participation and self-determination.

Young people using ICT tools to make their voices heard are creating much of the momentum. The growth of social media and open source Internet-based platforms is also facilitating access to education.

The new versions of ESD require alternative forms of teaching and learning and stakeholder interaction in which critical thinking, meaning-making and capacity-building for sustainable development become more important.



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NEW FORMS OF TEACHING AND LEARNING FOR SUSTAINABLE DEVELOPMENT



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General Trends

More types of learning [have] evolved since ESD is being taught in different types of vocational and technical schools. Sometimes ESD is being taught through different projects which combine different types of learning...and connect more than one subject area (GMES, Croatia).

A noteworthy pedagogical shift seems to be occurring in ESD as the DESD unfolds. It is marked by a rise in alternative/innovative forms of teaching and learning.

The M&E literature review (Tilbury, 2011) identified four key processes underpinning ESD: processes which stimulate innovation within curricula as well as through teaching and learning experiences; processes of active and participatory learning; processes which engage the 'whole system,' and

processes of collaboration and dialogue (including multi-stakeholder, and intercultural dialogue).

In the global monitoring and evaluation survey (GMES), nine types or forms of learning associated with ESD were distinguished. Some can be considered conventional (e.g. transmissive learning and disciplinary learning) and some more cutting-edge (e.g. multi-stakeholder social learning and systems thinking-based learning). They are described briefly below:

- **Discovery learning** – learners are immersed in a rich context where they encounter some element of mystery; they become curious and begin to make sense of their experience through their own exploration.
- **Transmissive learning** – using didactic skills (e.g. presenting, lecturing, story-telling) and supporting materials (e.g. workbooks, instruction

forms, visuals) a body of knowledge, set of rules or code of conduct is transferred to the learners.

- **Participatory/collaborative learning** – although not identical, both emphasize working together with others and active, not passive, participation in the learning process, which tends to focus on resolving a joint issue or task.
- **Problem-based learning** – focused on solving real or simulated problems, to better understand the issue or find ways to make real-life improvements. Issues are either identified by the learners, or pre-determined (e.g. by teachers, experts, commissioning bodies).
- **Disciplinary learning** – taking questions of a disciplinary nature (e.g., geographical and biological) as a starting point, to better understand underlying principles and expand the knowledge base of that discipline.
- **Interdisciplinary learning** – taking issues or problems as a starting point, then exploring them from different disciplinary angles to arrive at an integrative perspective on possible solutions or improvement.
- **Multi-stakeholder social learning** – bringing together people with different backgrounds, values, perspectives, knowledge and experience, from both inside and outside the group initiating the learning process, to set out on a creative quest to solve problems that have no ready-made solutions.
- **Critical thinking-based learning** – exposing the assumptions and values people, organizations and communities live by and challenging their merit from a normative point of view (e.g. animal well-being, eco-centrism, human dignity, sustainability) to encourage reflection, debate and rethinking.
- **Systems thinking-based learning** – looking for connections, relationships and interdependencies to see the whole system and recognize it as more than the sum of its parts; and to understand an intervention in one part affects other parts and the entire system.



Figure 2.1 below shows the number of times GMES respondents (n=213) from 102 countries ticked the forms of learning described above. Discovery learning, systems thinking-based learning, critical thinking-based learning, interdisciplinary learning, problem-based learning, and participatory/collaborative learning were mentioned the most.

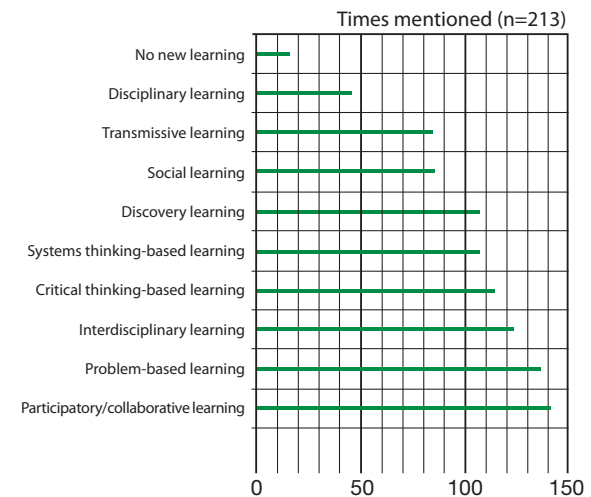


Figure 2.1 Types of learning associated with ESD as identified through the GMES.

Many respondents to the GMES commented that ESD can never consist of only one form of learning. It requires blends of types of learning. The blend has to fit the group of learners (age, knowledge, interests, abilities), the learning context (pedagogical climate, cultural traditions, political climate) and the available resources (teacher competence, teaching materials, ICT, financial).

[The kind of] learning [taking place] is more or less determined by context and content. So, it is wise to suggest various types of learning and provide choices. It will be more effective if our teaching [is] directed to facilitate learners identifying [their] own learning ways. So participative learning could be most effective in promoting problem based, system and critical thinking learning, with localization and contextualization (GMES, Nepal).

The learning types are all important, and in addition, attitude to accept different views and diversity is, in our idea, also key for ESD learning (GMES, Japan).

Effective ESD needs to incorporate all of these elements and will also depend on the level the student is working towards which approach they prefer (GMES, UK).



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Other forms of learning: philosophical enquiry at all ages, exploring values, self-learning.

Sixteen respondents also mentioned other forms of learning: philosophical enquiry at all ages, exploring values, self-learning, experimental learning, inclusive pedagogy, education for empowerment, community-based learning, action-based learning and livelihood skills training.

The Bhutanese schools also focus on mindfulness and care/compassion for the learners. So there is an attempt to address all abilities within an inclusive school environment (GMES, Bhutan).

In our context values and ethics have been mainstreamed along with ESD perspectives. All our programmes and courses must integrate introductory as well as applied Ethics relevant to each profession (GMES, Uganda).

[E]ducation that students can participate in and feel empowered. Take for example when my school (Pre-School through grade 6) decided we had way too much Styrofoam go ... in our dump and along our roads. We [assembled] a complete array of eco-utensils made from corn starch. We obtained samples and had a nearby hotel try them. Then we went all around the island with samples showing them to restaurants and asking them if they would use them instead of Styrofoam. The kids felt they were making a difference! We engage in that type of education often (GMES, Bahamas).

Three languages were used in the GMES: English, French and Spanish. Table 2.1 shows how different forms of learning were ranked per language area, from 1 (most mentioned) to 9 (least mentioned). A high level of agreement is indicated on the importance of participatory/collaborative forms of learning. Notable differences can be found in rankings for transmissive learning (1st-2nd for French-language respondents, 8th for Spanish and English) and critical thinking-based learning (ranked 3rd and 4th respectively for Spanish and English, but 9th for French). These findings may point to cultural differences as well as educational and schooling traditions.

	English (n=157)	French (n=26)	Spanish (n=30)
Participatory/collaborative learning	1-2	1-2	1
Critical thinking-based learning	4	9	3
Problem-based learning	1-2	3-4-5	2
Transmissive learning	8	1-2	8
Interdisciplinary learning	3	3-4-5	4
Discovery learning	6	3-4-5	7
Systems thinking-based learning	5	6-7	5
Disciplinary learning	9	6-7	9
Multi-stakeholder social learning	7	8	6

Table 2.1 Rankings of various forms of ESD-related forms of learning by language of the response.

A UNESCO Chair from France expressed a sentiment heard not only in French-speaking countries but in many parts of the world.

The worst factor [limiting the potential of ESD] was a pedagogical tradition resulting from a centralized and top-down institutional construction. This pedagogy was mainly addressing old-fashioned education mainly focusing on disciplinary approaches referring only to basic and theoretical knowledge rather than transdisciplinary approaches referring to concrete approaches (leading) to new behaviours. The launching of the Decade opened minds and curriculums to bring better answers to our society (UNESCO Chair Report, France).

Some respondents did not see any new forms of learning emerge within the context of ESD. This could mean they do not consider the forms of learning listed in the survey as particularly new, or as emergent in the ESD context.

...since good ESD in primary schools can look remarkably like good primary education (for obvious reasons), these trends may not be as emergent as the question is clearly looking for (GMES, United Kingdom).

The Ukrainian “Lessons for sustainable development” curriculum illustrates the previous point. The curriculum “combines knowledge and action; focuses on easy-to-track changes in students’ daily life and behaviour; and, most importantly, is open to embracing the wisdom of children, who then have the opportunity to explore and create their own way of life and their own values uniquely and beyond their teacher’s ability to convey. Involvement of students in ESD is much more than an enjoyable learning process. It gives them methods, skills and tools that will help them to be successful in many spheres of life and develops their confi-

dence that they, their community and humankind have a worthwhile future that they can help shape” (Mehlman et al., 2010).

The “whole person” approach is captured in the “Living and Learning” pedagogy by the NGO GAIA:

The purpose of the Living and Learning pedagogy is to educate the whole person where all senses are involved. The use of what are called «seven intelligences» or «multiple intelligences» has become a popular way of conveying our intention. Different people learn in different ways and we use:

- Hands-on experience, body-based memory
- Theory, reading, discussions, reasoned dialogue
- Dance, song, creativity, play, games, performances
- Quiet time, reflection, meditation, connecting with nature
- Workshops, symposia, seminars
- Interactive group process, participating in decisions
- Social time

Creating a sense of learning community and trust is also part of the Living and Learning Pedagogy. This is achieved with... time for sharing, open communication, transparency in the relationship between teachers and students, and creating a safe, supportive environment.

The learning environments reflect non-hierarchical values; rotation of responsibility; cherishing diversity in ages, cultures, abilities; respect to different, even contrasting, points of view; emphasizing the needs and health of the whole (KIS, United Kingdom).



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In some contexts, the development and inclusion of SD or ESD in curricula seems to be causing a co-evolution of pedagogy. ESD's presence goes hand-in-hand with a rethinking of the kind of learning necessary to address sustainability issues. ESD is thus becoming a catalyst of educational reform.

Education for Sustainable Development has in general re-shaped the way we teach and learn at all levels. . . . Specifically . . . pedagogy for teacher education becomes community-centred as in-service teachers are motivated and encouraged to attend closely to the environment. Consequently a new relationship between the university and the community is developed. Teaching and learning become 'situated' in community with both in-service teachers and community members teaching and learning from each other. There is an emphasis on active and participatory learning and on problem-solving as these teachers learn and are motivated to take action to address problems in the community. Paralleling and complementing the work in community are reflection and research. Equally important, there is the development of a global view and a heightened moral purpose which form the foundation for this approach (CS, Jamaica).

In contrast another response indicates that this co-evolution of pedagogy may not be 'driven' by ESD.

I do not believe that ESD has necessarily led to these changes. The changes in learning styles and the development of ESD have happened together, but without direct causality, as there are many other reasons for university teachers developing newer and more active styles of learning (GMES, United Kingdom).

► Summary Notes

The discourse concerning ESD has shifted. ESD is viewed as a mechanism for transforming education and learning, not simply as an addition of sustainable development-related content to curricula.

The responses collected in the DESD M&E exercise all seem to point to a need for well-rounded, interactive, integrated and blended forms of learning

Preliminary results showing increased student engagement (i.e., intellectual, academic, and social engagement) in school are pointing to evolution or co-evolution of pedagogy and sustainability content. Their exact relationship, however, is not yet known.

"It's a bit of a chicken and egg situation - sometimes sustainability initiatives start because they are addressing a particular issue (e.g. racism) and we do have some students that are really passionate about these issues. Generally though, our students know that teachers will support their voice and interests and they will go with it - whether their interests are related to sustainability or not." (CS, Canada)

"It's tough to say and probably too soon to know." (CS, Canada)

"I would like to think there is a relationship" (CS, Canada).

So far, the research capturing the co-evolution of sustainability content, pedagogy and increased student engagement is on a limited scale although there is a growing amount of anecdotal evidence. The evidence base is still not solid enough to draw firm conclusions, but it is a promising direction for further study.

ESD's presence goes hand-in-hand with a rethinking of the kind of learning necessary to address sustainability issues.

that allow for the development of the whole human being.

Although data indicate the presence of ESD triggers the emergence of these new or alternative forms of learning, more research is needed to prove a causal relationship.

Learning in Specific ESD Contexts

This section looks at the various ESD contexts: **Early Childhood Care & Education (ECCE), Primary Education, Secondary Education, Higher Education, Technical & Vocational Education (TVET), Non-formal Education, and Education in the Commercial/Private Sector.**

number of respondents than others in the Global Monitoring and Evaluation Survey (GMES), therefore providing more data. Higher education and primary education were the most represented; education in the commercial/private sector and in early childhood education and care, the least (Figure 2.2).

Some ESD contexts were represented by a larger

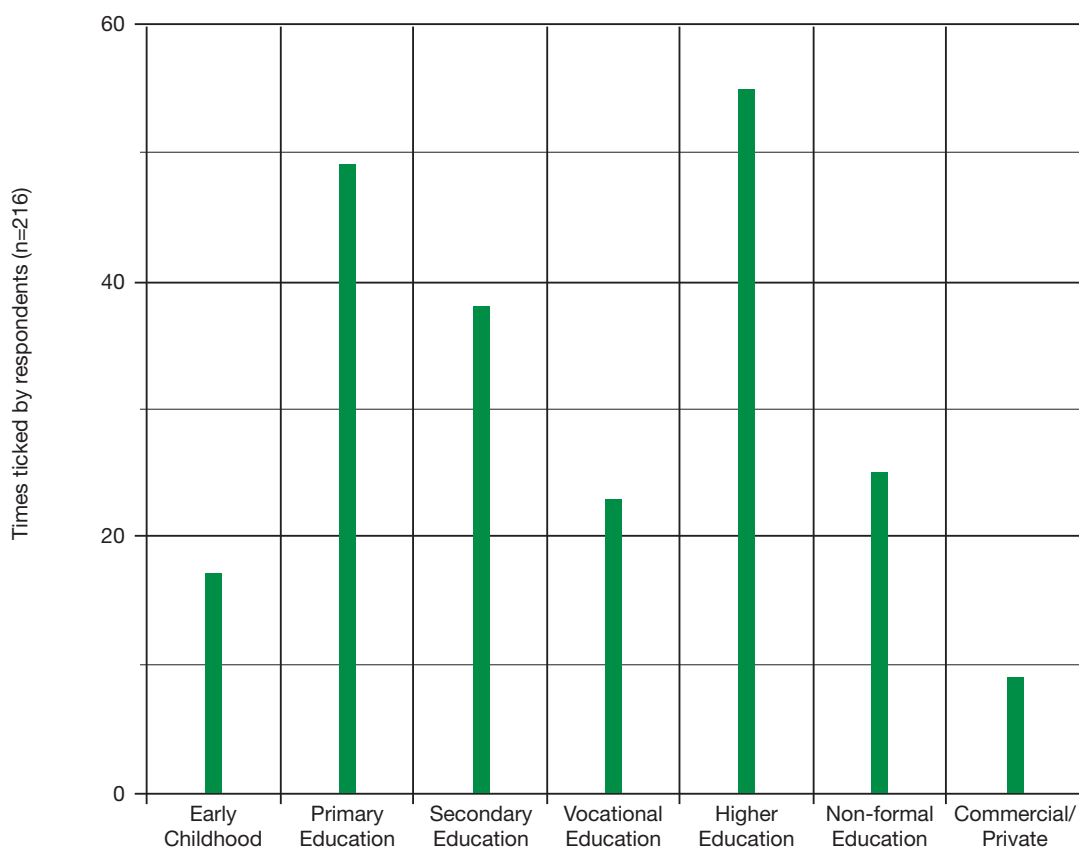


Figure 2.2: GMES respondents' background

► Early Childhood Care & Education

Early childhood care and education (ECCE) refers to programmes that offer a structured set of learning activities as well as care, either in a formal institution (pre-primary or ISCED 0) or as part of a non-formal child development programme. ECCE programmes are normally designed for children from age three and include organized learning activities for at least two hours per day and 100 days per year.

marginal, however. Of the 213 respondents, only 10 answered questions in this ESD context.

The availability and accessibility of ECCE varies significantly around the world. In countries like Sweden, up to 85% of young children participate, while enrolments are below 5% in some of the poorest countries. Conditions and pedagogical climate also vary widely.

ESD in ECCE is on the rise and better articulated than early on in the DESD. It appears to be still



There are 313,656 children aged 0 to 5 years old in Jamaica. Statistics indicate that there is enrolment of 96.4% of children from the relevant age cohort in early childhood institutions. There are 2,137 basic schools in the island, the vast majority of which are community-run institutions. Although enrolment is high, the quality of education, stimulation and care offered in some of these facilities leaves much to be desired. In some institutions, staff is untrained, classrooms are crowded, there is a lack of resource material and curricula are inappropriate. Currently there are moves to implement and enforce uniform standards and curricula under an Early Childhood Commission.

ECCE in Jamaica. UNICEF: http://www.unicef.org/jamaica/children_1568.htm

Why do kindergartens offer more for moving towards a more sustainable world than many of our universities? Kindergartens ideally are places where young children live and learn, explore boundaries, in a safe and transparent world without hidden agendas. Kindergartens are places where conflict emerges every day and is used as a 'teachable' moment. Kindergartens today often are multi-cultural places where kids with different backgrounds come together and get to know each other as they are, not as they are portrayed by others. Kindergartens are also places where different generations meet and interact (children, parents, grandparents). They are often located in the heart of the community. There are no dumb questions in kindergarten and there's always time for questions and questioning. The life-world of the child forms the starting point for learning, not a disciplinary problem. There is room for exploration, discovery and multiple ways of expressing oneself. It's a place filled with energy. And there are some basic rules, principles, and skills needed to function in an organic whole.

Kindergartens as a learning context for ESD (Finnish UNESCO Series on ESD).

To create ECCE conducive to the type of learning environment described in the example above from Finland, policies and frameworks must exist that recognise the importance of such an environment and its benefits for a child's development.



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The orientation Law on National Education enacted in 2008 stipulates in Article 39 that Preparatory Education aims include: support for children through fun activities, the development of their personality, making them aware of their bodies, especially through the acquisition of sensorimotor skills through play, the creation of good social skills by engaging them in social life. A formal programme of Preparatory Education is systematically applied in all classes of preparatory education through the national territory. This programme aims to develop in children a number of basic skills related to sustainable development, including: confirming their own identity and self, communicating using different means and tools, seek strategies to discover the components of the surrounding environment, and interacting with others (GMES, Algeria).

The level of formal commitment to integrating ESD in ECCE varies greatly around the world.

ESD has become an integral component of ECCE: As ECE is one of the key factors to meet the EFA goals and MDG goals; trainings for ECE interventions held everywhere covers ESD (GMES, Myanmar).

There has not really been any conscious effort to integrate ESD into this stage of education nor have there been any type of training geared towards trainers at this level in Lesotho (GMES, Lesotho).

OMEP (Organisation Mondiale pour l'Éducation Préscolaire), with the UNESCO Chair Early Childhood Education at the University of Gothenburg, has developed a method to get children to think and talk about sustainability. It uses images, often the children's own drawings.



Figure 2.3 Using drawings as a starting point for children's engagement with sustainability (KIS, Sweden).

OMEP also developed a hands-on ESD project centred on the five 'Rs'. It is suitable for older age groups too (Figure 2.4).



Figure 2.4 Core elements of OMEP's ESD project for your children (Ingrid Pramling, UNESCO ESD in ECCE Chair, KIS).

► Primary and Secondary Education

The great challenge is to create public policies to integrate school and community in a network of formal and non-formal education processes for sustainable development. However, the systems created in the industrial development era still prevail and duplicate the technocracy and production model of that society. Most of the time, they promote a serial teaching in which knowledge is tantamount to a curriculum limited to fragmented and lifeless subjects, transmitted through learning books and didactic materials rigidly established by educators that consider themselves as knowledge holders (CS, Brazil)

Primary or elementary education refers to educational programmes designed to give pupils a

OMEP promotes the rights of the child to education and care worldwide and supports activities that improve access to high quality education and care; they report 9142 children involved in their programme with an impact on 385 preschools, schools and other settings for small children in 241 cities and regions around the world (KIS).

Summary Notes: Early Childhood Care & Education

There were few respondents for this sector, but the data they provided show the promise of ESD in ECCE.

The presence of ESD in ECCE is a new development. Early in the DESD, the need for ESD at the early childhood level was questioned. Now there is a realization ESD has an important place in this context and can help children express themselves and make sense of the world.

Predictably, the ECCE context varies greatly around the globe; in many parts of the world it is absent or only accessible to the privileged.

Around the globe there are literally tens of thousands of ESD projects.

sound basic education in reading, writing and mathematics, along with an introduction to other subjects such as history, geography, natural science, social science, art, music and sometimes religion. These serve to develop pupils' ability to obtain and use information.

Secondary education is usually divided into lower and upper secondary stages. Lower secondary education (ISCED 2) is generally designed to continue the basic programmes of the primary level but the teaching is typically more subject focused. The end of this level often coincides with the end of compulsory education. In upper secondary education (ISCED 3), the final stage of secondary education in most countries, instruction is even more organized into subjects and teachers typically need a higher qualification than at ISCED level 2.



Unlike in ECCE, primary and secondary schools have a history of engaging in topics related to ESD. Often these are labeled environmental education or health but also, more recently, global citizenship, disaster preparedness, climate change and consumerism.

The Canadian province of Manitoba is re-orienting its schools to address sustainable development. ESD is part of the mission statement of the Ministry of Education of Manitoba, stating: "To ensure that all Manitoba's children and youth have access to an array of educational opportunities such that every learner experiences success through relevant, engaging and high quality education that prepares them for lifelong learning and citizenship in a democratic, socially just and sustainable society." The first overarching goal of the ministry is to ensure education in Manitoba supports students experiencing and learning about what it means to live in a sustainable manner. The province of Manitoba has a total of 181,862 students who will be able to grow up as key actors in building a more sustainable society. See: Manitoba Education, <http://www.edu.gov.mb.ca/edu/>

Around the globe there are literally tens of thousands of ESD projects, some school-based, some extracurricular through school clubs, and countless teaching materials, many in print and many more in digital form.

ESD is becoming a part in 'Creative Experience Activity' of 2009 National Curriculum – ESD is often integrated in related thematic areas – environmental education, green growth education, energy education, climate change education, multi-cultural education, etc. Survey Results in 2010 showed that teachers were conducting ESD in their education programs including curricular, extracurricular, and alternative activities, as well as school-wide approaches such as model school projects. Most schools that participated in the survey 2010 had education programs on SD-related themes such as climate change, energy, cultural diversity, democratic citizen, etc. but it was seen that a lot of ESD programs were conducted based on the enthusiasm of teachers or the interest of principals in model school projects, etc. ESD training for teachers was conducted by Seoul Office of Education in 2011 with the cooperation with UNESCO (GMES, Republic of Korea).

More than a thousand schools in Tabasco have been subject to repeated flooding in the past five years, and the schools that are not flooded are pressed into service as refuges or emergency shelters. This throws into sharp relief the close relationship between DRR and school performance prejudicing the sense of normality and having a powerful effect on the quality of the process as a whole. The school as a centre of refuge becomes a mediator between the different forms of inclusive education. ESD and risk management must be designed as inclusive elements in their coexistence strategies in contexts of religious and cultural diversity and other situations that may challenge inclusivity (CS, Mexico).

ESD is mentioned in official curricula of secondary schools. However, most educational projects on SD are undertaken outside the framework of formal curricula, in collaboration with environmental NGOs, institutions and other local organizations. These mainly foresee an active involvement of students in participatory/ interactive/open air activities. ...climate change/biodiversity/risk reductions are seen as aspects of the broader issue of SD. As an example, hundreds of schools participate every year at the ESD WEEK, promoted by the Italian Commission for UNESCO in the framework of the DESD campaign, with a wide range of activities such as seminars, lessons, laboratories, role games, exhibitions... (GMES, Italy)

ESD is appearing in primary and secondary education as part of the curriculum.

All schools were required to draw up a SD plan by the end of 2010. This plan must contain the following: implementation of ESD, account on how the school will change its operations and everyday activities so that these correspond to the targets set in the plan as well as who is responsible for the implementation. The promotion of sustainable development has been incorporated into the national curricula in basic education and in general and vocational upper secondary education. National Board of Education works in close cooperation with schools and communes to enhance the ESD (GMES, Finland).

ESD has become a key and/or integral component of primary education . . . this is evidenced in some disciplines like social studies, science and out of class activities. Teachers make schemes of work, and it's examinable at national levels of primary (GMES, Uganda).

ESD is only included some areas by individual schools that have been introduced to the concept by given development organizations (GMES, Uganda).

ESD is imbedded in the curriculum and some schools have developed a holistic school approach to ESD (GMES, Uganda).

After the new education standards have been developed and new textbooks are being written, ESD is becoming more and more a part of Primary Education. Still, there is certainly hope for more (GMES, Armenia).

ESD is integrated in science curricula of primary education and other subjects by introducing SD concepts through pictures and complete lessons (GMES, Jordan).

ESD has become an essential component of primary education. The CRDP is now working on a curriculum in line with the competences approach and is integrating the ESD dimension in every subject (GMES, Lebanon).



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Education for sustainable development in the sense of it being a process enabling learners to develop the knowledge, skills, attitudes and values required to become active citizens, in decision-making processes that will improve the quality of life is a proposal that has been made in the new Curriculum Framework. It has been taken on board in a number of learning areas including the sciences and other areas. It is expected that this take-up will increase (GMES, Malta).

ESD has become an essential component of primary education.

Secondary education is a key part of ESD practice in China. During the past decade, we have expanded ESD practice into thousands of schools. . . . Some provinces and city like Beijing, Shanghai, Jiangsu, Guangzhou, Inner Mongolia etc. are the current leaders of ESD in China (GMES China).



ESD has become a key and/or integral component of secondary education. In our associated schools, more than 150 schools, we tried that our work plan and project focus on ESD in each program during this 5 years, 2010/2015 (GMES, United Arab Emirates).

ESD is a integral part of Tonga Curriculum Review although ESD is not put through as a package. In our current curriculum review activities, ESD is included in all Key Learning Areas. They are English, Maths, Science, Tongan, Movement and Fitness, Tongan Society and Cultures, Design and Technology (GMES, Tonga).

We have adopted a consistent integrated approach to ESD. The better and broader opportunities, in our opinion, [stand to] achieve better outcome results. ESD is part and parcel of all curricula by grade, by subject [with] explicit interdisciplinary links stated apart from the specific study content. Besides, by choosing their core curriculum and free elective courses, schools and students can decide on their own [to go] deeper into particular topics (GMES, Bulgaria).

ESD is already taken on board in many Primary Schools. This is set to increase in the future (GMES, Malta).

The recently revised programmes have included the concepts of ESD in every subject such as protection of the environment, citizenship education... (GMES, Burundi).

Japan has included ESD into its national curriculum guidelines and promotes ESD through more than 300 UNESCO Associated Schools. The project was launched to enhance the overall learning process in support of new attitudes and action for sustainable development and to enable students to understand the concept and, in a practical way, to become actively involved in it. Students took a real interest and not only grasped many of the issues facing the world today but began to understand, on their own, how to deal effectively with them.

Yet more is needed, respondents said.

There is need for government and key line ministries to prioritize ESD as part of primary education; building on some of the existing school based ESD approaches that have proven appropriate in given pilot schools and teacher training institutions (GMES, Uganda).

So in the future, we hope for more attention to ESD in underdeveloped regions, especially providing more ESD trainings to teachers and principals (GMES, China).

More teacher training, vocational development, more guides for teachers... (GMES, Egypt).

Pre-service and in-service teacher education on ESD and ESD approaches needs to be conducted - Good practices need to be shared to encourage teachers and students - Quality Criteria or Guidelines for ESD implementation needs to be distributed for teachers - Competencies for ESD of teachers need to be fostered (GMES, Republic of Korea).

Curricula Framework programs are theoretically oriented and treat the contents of ESD, but there is not sufficiently practical co-ordination at local level (GMES, Bosnia and Herzegovina).

There are **two main strategies** for ESD. One is the add-on and integration strategy (Table 2.2); the other is the whole system redesign strategy. The first seeks to widen the space within existing, often national, curricula for ESD; the second challenges the entire system by reorienting:

- **Educational content structure** (traditionally disciplinary-based, conceptually abstract and separate from the real world, now moving toward exploration of community problems through interdisciplinary studies);
- **Learning processes** (traditionally teacher-centred stressing transfer of knowledge and the development of cognitive skills, now moving toward student-centred participatory learning that uses analytical thinking and decision-making); and

■ **School organization** (traditionally hierarchical with limited teacher, parent and student participation and without connection to the surrounding community, now moving toward more participatory decision-making involving school and community).

Both strategies are used simultaneously in many countries. But in countries that provide more space for participation and community engagement, and also in countries where entrepreneurship is becoming an important part of education and training, the opportunities for a whole system redesign appear much greater.



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Schools engaged in ESD try to model sustainability

Country	Status of ESD	Demonstration of ESD becoming integrated	Changes needed to make ESD stronger
Bahamas	Being integrated	<ul style="list-style-type: none"> • ESD being included in the curriculum of many schools through efforts of NGOs which incorporate ESD into their education programmes that include field trips, school presentations and environmental summer camps • Existence of a national curriculum for environmental education, in which students are engaged in several initiatives relating to island sustainable development • Schools learning from others which are including ESD 	<ul style="list-style-type: none"> • Build capacity for teachers to infuse ESD within core curriculum • Integrate ESD into the Ministry of Education's curriculum with sufficient funding
Guyana	Being integrated	<ul style="list-style-type: none"> • ESD infused in primary curriculum • Primary curriculum being revised to ensure that it is aligned with Guyana's Low Carbon Development Strategy • Establishment of health and environmental clubs • Promotion of "culture days" in schools • School competitions focused on SD issues 	<ul style="list-style-type: none"> • Provide better training for teachers in the government schools • Increase science literacy requirements in primary schools
Jamaica	Being integrated	<ul style="list-style-type: none"> • ESD part of primary curriculum, e.g. within attainment targets and objectives of the Social Studies and Science • Values, skills and attitudes learnt provide a framework for the application of knowledge, leading to SD 	<ul style="list-style-type: none"> • Encourage greater collaboration with associate agencies such as the National Environment and Planning Agency (NEPA) to ensure that the objectives for sustainable development are realized

Table 2.2 ESD in Primary Education in selected countries in the Caribbean



Some respondents are indeed seeing movement toward re-orienting teaching, learning and the school itself towards sustainability. This 'whole school approach' takes everything into consideration: day-to-day operations (energy use, catering, staff and student mobility, decision-making) curriculum, pedagogy and community links (involvement of parents and other stakeholders and resources, using the community as a living learning laboratory).

The most significant learning processes have been collaborative, whole school development processes that involve all members of the school staff and the students. The influence of these processes goes beyond what is achieved in terms of learning SD contents. The processes have had impacts at the social level generating participatory skills that are crucial in promoting SD and which are also transferable to be used in other contexts outside the school. The use of the SD criteria and self-evaluation conducted before applying the certificate have also had remarkable impacts in the development of school curriculum and learning methods like active and participatory learning (KIS, Finland).

[M]uch more emphasis [is placed] on implementing an holistic and comprehensive approach towards understanding, contextualizing and developing ESD issues at the school level, engaging diversity of stakeholders from inside and outside the educational system linking school and community. ... a rethinking of the school model as more open to community expectations, demands, and participation and not solely understood as formal provisions and settings, could lead to a better understanding of ESD issues at the school level and to their effective development as part of the school-based curricula (UNIR, UNESCO IBE).

PERL and many other actors in the field have focused on providing active, practical ways of learning, methods involving the local community around the school in learning processes, and methods which open for input from elderly citizens (KIS, Norway).

When schools look specifically at their grounds they are often looking at different aspects of ESD. Growing their own fruit and vegetables is one of the most popular ways of doing this and there is a range of organizations, initiatives and support programs to help them do this. Therefore this is proving very popular with all age groups and abilities of children. Increasing biodiversity within grounds is also popular and many schools develop habitats within their grounds allowing for study inside and outside of lessons e.g. through clubs and societies (KIS, United Kingdom).

In the Asia Pacific region, there has been great progress in both implementation of programmes at the school level and in the reforms needed to include sustainability into education. China has designated 1,000 schools as experimental schools for Education for Sustainable Development (ESD) and has included ESD in the National Outline for Medium and Long-term Education Reform and Development (2010-2020). These changes have allowed (exploring) school reform and the inclusion of sustainability practices in the educational system (GMES).

As schools work more closely with community groups and open up to the wider society, connections are made with higher education.

Universities play a significant role in training and development of local resources for the participation of the project, managing the interrelationship of health care, education, civil defense, Red Cross, among others. Intervention activities and actions of the project are developed, depending on the territorial, in the schools, health centers, houses of family doctors and clinics and institutions, workplaces, factories, industries, cooperatives agricultural production, basic units of cooperative production, video halls, houses of culture, communities, neighborhoods and other places that were eligible to have as many people to participate (GMES, Uruguay).

Another trend seen in formal education (K-12) is that concepts like global citizenship, inter-cultural dialogue and life-skills are becoming part of the curriculum. These concepts are not always explicitly connected to ESD but do create opportunities for schools.



In addition to academic subjects, co-curricular subjects such as moral and civic education, human rights and Life Skills contain ESD related topics. For example, Life Skills includes lesson topics related to the following seven areas: environmental and sanitation, emotional intelligence; disease prevention and nutrition; drug use; social skills; reproductive health, HIV/AIDS... (GMES, Myanmar).

By 'inter-cultural' dialogue we would mean 'cross-sector' as members from local government, schools, colleges, NGOs, etc. all operate within different cultures. We offer an opportunity to work outside of the 'normal' perspectives and vocabulary of each member (KIS, United Kingdom).

Anandshala meaning 'school of joy' is an approach developed by CEE in partnership with UNICEF and Government of Gujarat in 2003 and onwards as a model and methodology for education in partnership with village community, state government, local institution, individuals, teachers and children. The project aimed at improving the infrastructure of the existing school and the quality of teaching-learning process. This programme tries to engage whole of system as well as a collaborative approach (KIS, India).



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ESD school recognition and certification

There are networks of recognized schools, school labels and certification schemes in place that can help schools realise their sustainability ambitions. Sometimes these are supported by a national education authority and sometimes by a sustainability-oriented NGO.

The Curricular Framework shows objectives and contents that explicitly include ESD topics and others that shall allow their incorporation according to the purposes of curriculum management. A program called Sistema Nacional de Certificación Ambiental de Establecimientos Educacionales (SNCAE) (National System of Environmental Certification of Schools) is implemented. Almost 1500 schools throughout the country have joined this program, and one of its objectives is to promote ESD (GMES, Chile).

The certification system has directly and indirectly involved many stakeholders. The Finnish National Board of Education has been actively involved in the planning of the system and sustainability criteria to ensure their conformity with the national core curricula. The criteria have made an impact on the implementation of the core curricula at the local level. The local education providers have also set targets for schools and educational establishments on constructing SD programs and application of certificates. Research institutes like Helsinki University have participated in the creation of the SD criteria (KIS, Finland).

Indonesia has a network of Adiwiyata green schools. The expression Adiwiyata is derived from two Sanskrit words: adi (noble, ideal) and wiyata which means a place where knowledge and ethics in relation to living sustainably is gained. The program aims to create conditions whereby schools become places of teaching and learning that contribute to an aware school community, that assumes responsibility for preserving the natural environment and fosters sustainable development. Participation is the key. The school community must be involved in the school management which includes planning, implementation and evaluation. The program is open to all schools in Indonesia (NESDJ, Indonesia).

Eco-schools has over 11.7 million students engaged in its programmes in 52 countries and works to empower students to be the change our sustainable world needs by engaging them in fun, action-oriented learning. In 30 countries their activities include corporate sponsored programmes worth approximately 1.7m USD annually. The relevance and efficiency of their energy-saving programmes are outstanding: in England, a 20% reduction in CO2 over the last three years, in Australia energy savings for up to 71%. The global average is around 8-10% (KIS, Denmark).

Eco-schools incorporates seven elements for schools to adopt as a methodology. These elements have been designed to be the core of the Eco-schools process, yet the structure is flexible enough to be adopted in any country, and at any level of schools' previous environmental achievement. Student involvement throughout the process is an integral factor. A committee organizes and directs Eco-schools activities and consists of the stakeholders from the school environment: pupils, teachers, cleaners, caretakers, parents and governors. The sense of democracy involved, and the motivation in resolving initiatives brought forth by the students themselves are products of this process. Each school produces its own 'Eco-code' or statements of intent, outlining what the students are striving to achieve (KIS, Denmark).

Government's initiatives for mainstreaming of peace, moral, human rights, environment, etc. relating issues in school education can be considered as evidence in this direction. The socio-cultural problems, economic situations and the increasing effect of globalization have compelled us to re-orient our education to ESD (GMES, Nepal).



Summary Notes: Primary and Secondary Education

ESD in primary and secondary schools around the world manifests itself in many forms, sometimes under different names.

Recognition is growing that its value is greater as a source of innovation in teaching and learning than as simply another subject to add to the curriculum.

Countries and regions are paying greater attention to threats to future wellbeing (e.g., tsunamis and extreme weather events). This coincides with a call for innovation in education and for stronger ties between schools and communities. Whether or not a causal link exists between these trends is not known. The possible co-evolution (or co-evolution with some interaction) of these three is a point of departure for further study.

Yet it must be stressed that conditions and formal educational systems differ widely around the world. The more autonomy allowed to schools, teachers and students to shape curricula, the greater the likelihood of education innovation and cross-boundary learning in and with society. Where the space for self-determination is limited, the development of quality educational material that can be linked easily to existing mandated curricula will remain necessary.

Competencies are elaborated within three categories: A holistic approach, envisioning change and achieving transformation. Although teacher education is not officially part of the M&E review of learning and processes, teachers, their preparation and continued professional development, are im-

Coping with changing political climates

While the trends reported all seem favorable to the expansion of ESD, there are systems in place especially in formal education that can be resistant to innovation. Also, a change of government can open more opportunities for ESD or it can mean a shift to other priorities and a lack of support for ESD, as some respondents reported.

There are systems in place especially in formal education that can be resistant to innovation.

There is also evidence of some governments using ESD as an overarching concept to bring order and synergy to a host of social issues competing for space in schools' already overcrowded curricula.



portant to primary and secondary education. With this in mind, the UNECE published Learning for the future: Competences in Education for Sustainable Development. This document makes recommendation to policy makers on professional develop-

ment across all sectors: for teachers/educators, managers and leaders; governing and managing institutions; curriculum development and monitoring and assessment. It also identifies a framework of core competencies in ESD for educators.

	Holistic approach	Envisioning change	Achieving transformation
The educator understands ...	The basics of systems thinking	The root causes of unsustainable development	Why there is a need to transform the education systems that support learning
The educator is able to ...	Work with different perspectives on dilemmas, issues, tensions and conflicts	Facilitate the evaluation of potential consequences of different decisions and actions	Assess learning outcomes in terms of changes and achievement in relation to sustainable development
The educator works with others in ways that ...	Actively engage different groups across generations, cultures, places and disciplines	Encourages notions of alternative futures	Help learners clarify their own and others worldviews through dialogue, and recognize that alternative frameworks exist
The educator is someone who ...	Is inclusive of different disciplines, cultures and perspectives including indigenous knowledge and worldviews.	Is motivated to make a positive contribution to other people and their social and natural environment, locally and globally	Is a crucially reflective practitioner

Table 2.3 UNECE Competencies in ESD for Educators

See: http://www.unece.org/fileadmin/DAM/env/esd/6thMeetSC/Learning%20for%20the%20Future_%20Competences%20for%20Educators%20in%20ESD/ECE_CEP_AC13_2011_6%20COMPETENCES%20EN.pdf

► Higher Education



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Higher education covers programmes with more advanced educational content than is offered at secondary levels. The first stage of tertiary education is composed of largely theoretically based programmes intended to provide sufficient qualifications for gaining entry to advanced research programmes and professions with high skill re-

quirements (ISCED 5A) or programmes that are more practical, technical and/or occupationally specific (ISCED 5B). The second stage of tertiary education (ISCED 6) comprises programmes devoted to advanced study and original research and leading to the award of an advanced research qualification (Global Monitoring Reports, UNESCO).

An analysis of the *International Journal of Sustainability in Higher Education (IJSHE)* reveals that between 2001-2010 most articles focused on such topics as environmental management, university greening and reducing a university's ecological footprint (Table 2.4). The number of articles on pedagogy, learning, instruction, community outreach and partnerships increases in later volumes.



Area	n. articles	%
Environmental management/ecological footprint/campus greening	44	25
Integrating sustainability in existing disciplines	31	17
Pedagogy, learning & instruction	31	17
Philosophy/principles/concepts	19	11
Community outreach/partnerships	15	8
Policy/organizational learning/institutional commitment	15	8
Course development/curriculum	7	4
Auditing, assessment, quality assurance	10	6
Research	3	2
Competencies, professional development	3	2
Total:	178	100

Table 2.4 Thematic focus of articles published in the first nine volumes of IJHE (Wals and Blewitt, 2010).

Today there are still many examples of universities seeking to reduce their own environmental footprint by ‘greening the campus’ initiatives, often led by students. In the curriculum, the approaches known as ‘bolt-on’ (adding new courses and modules that have ESD elements) and ‘built-in’ (integrating sustainability in existing study and research programmes) can be found as well.

Recently, a growing number of universities appear to be engaging in a more fundamental makeover task.

At the University of Guyana (UG), teaching, research and outreach activities support ESD. Specifically, the School of Earth and Environmental Sciences (SEES) offers specialised programmes, such as their BSc in Environmental Studies, which offer a wide knowledge and skills base. The programme also includes a course specifically dedicated to environmental education: Introduction to Environmental Education. SEES also is actively engaged in awareness raising and educational activities among the University populace as well as the general public through the organisation and hosting of events such as seminars, field trips and activities in recognition of international environmental days (e.g., International Biodiversity Day, International Ozone Day, etc.), and the formation of a student environmental club (GMES, Guyana).

In many places too narrow a concept is taken and emphasis is placed solely on environmental or technical aspects. Thus, chemical engineers may rebrand their classes on pinch technology as ESD without considering the wider societal implications. The future emphasis must be on embracing the wider field of global societal responsibility, preferably in an interdisciplinary manner (GMES, United Kingdom).

Recently, a growing number of universities appear to be engaging in a more fundamental makeover task. They are reorienting teaching, learning and research in a way that will lead to new mental models, competencies and innovations that can contribute to sustainable living. Such engagement is also leading to alternative views of science itself and of the role of the university in society. Empirical, analytical and reductionist ways of understanding the world are being complemented with more integrative and holistic approaches, and with methodologies better suited to cope with complexity, uncertainty and contested knowledge. New forms of learning are emerging in the process:

Interdisciplinary learning, project-based learning, gaming, computer simulations, distance learning, backcasting, case-studies, policy-laboratories, problem-based learning, bootstrapping, values education, ecological footprint analysis, transdisciplinary learning, experiential approaches, reflective journal writing.

Learning and instruction approaches and methods featured in IJSE articles (Wals and Blewitt, 2010).



The most important change is the fact that ESD is now taken up in a transversal and transdisciplinary way in institutions. It fosters increased interest at all levels within higher education institutions (KIS, International Association of Universities).

...in retrospect, it is highly recommended that the normative framework for a more integrated approach for delivery of sustainable development be enhanced. This will ensure a holistic and integrated approach to reorienting higher education to address sustainability in practice. Starting points may include the formulation of Sustainable Development Goals to harmonize social, environmental and economic objectives... (UNIR, UNEP).

In Africa, the MESA partnership programme has been established with the aim of creating a mechanism and a supportive structure for universities to respond to environment, sustainable development and climate change challenges confronting the region. MESA emphasizes that African Universities have been engaged in a long and complex struggle to establish themselves as knowledge generators and disseminators, as partners to the state and their communities, and as critical voices of and in society MESA refers to Mamdani and other African intellectuals who suggest that to continue with this project, does not simply involve an 'adoption' of institutional rhetoric on sustainable development, or development of new structures and projects in universities, but a deeper engagement with the remaining institutional legacies of colonialism (and neo-colonialism) in Africa. This includes an examination of the current institutional form of the university itself, and contemporary trends to marketise and privatise university services in society. It, therefore, involves a broader post-colonial intellectual project of re-conceptualising African universities, their relationship to democracy and the societies, cultures and environments in which they are embedded.

The African MESA partnership in higher education (UNEP, 2008).

Many respondents from various regions point out how difficult it is to reshape deeply entrenched routines, structures and practices. Nonetheless, there are examples of universities beginning to do so, often in partnership with other universities and the local community.

A new kind of teaching and research that benefits and reaches communities has emerged. A striking feature of the initiatives being developed particularly within the MESA programme is what can be described as a 'new kind of teaching and research', which is aimed at community development and problem solving. This feature seems to permeate all disciplines involved in the MESA framework (e.g. law, engineering, science, education, journalism). Evidence of this 'new kind of teaching and research' can be found in the way that participating universities are:

- Enhancing participation in research design and in the conduct of research that benefits communities, and in paying attention to the way that research outcomes are used for community benefit.
- Engaging students in service learning and problem solving projects in 'real life' contexts.
- Forging stronger partnerships with local communities and development groups to identify priorities for research and development work.

Innovative strategies and approaches have emerged. In this regard, some participating institutions have reported to have established, or to be in the process of working with other local stakeholders to establish Regional Centres of Expertise in Education for Sustainable Development, using the framework provided by the United Nations University introduced during the MESA training. It was noted that this strategy provides an innovative mechanism for forging education and research community partnerships and linkages, and strengthens educational networking at a local level, and helps to identify ESD priorities at a local level (UNIR, UNEP).

University Sains Malaysia (USM) was selected by the Malaysian Ministry of Higher Education to implement the Accelerated Programme for Excellence (APEX) program. USM has built its education, research and community engagement programs around sustainability. USM's APEX proposal is called, "Transforming Higher Education for a Sustainable Tomorrow".

USM has executed a rebranding and advocacy programme that deepens and translates its main mission as "a pioneering university, trans-disciplinary and research-intensive that empowers future talents and enables the bottom billions to transform their socioeconomic well-being." USM is also part of the UNU-recognized RCE-system.

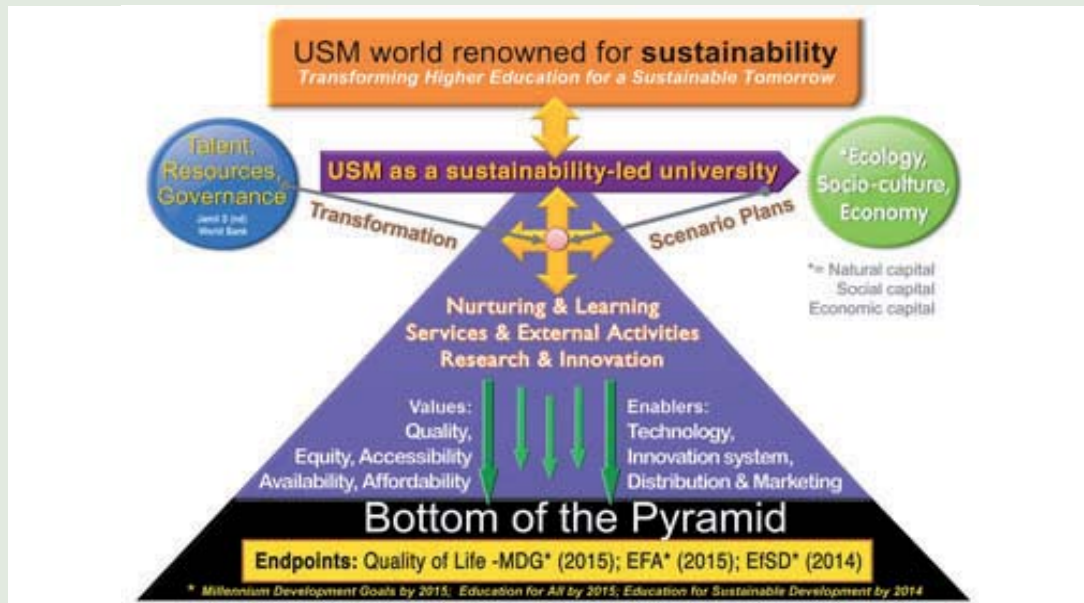


Figure 2.5: University Sains Malaysia as an example of university re-orienting itself entirely towards sustainability and receiving national recognition for doing so (KIS, Malaysia and www.kck.usm.my).

Besides the public universities, there are 52 private universities in Costa Rica and also a substantial number of para-universities. A group of them have created a Network of Sustainable Institutions of Higher Education (REDIES). The goal of REDIES is to achieve a commitment on the part of the educational institutions to achieve sustainability in their campuses and neighbouring communities, by establishing strategic alliances in the field of sustainability for the exchange of experiences and technical expertise (NJESD, Costa Rica).

At the level of higher education, a consortium was formed among six universities (Universidad de Santiago de Chile, Universidad de Talca-Sede Santiago, Universidad Tecnológica Metropolitana, Universidad Andrés Bello, Universidad Bolivariana and Universidad de Artes Ciencias y Comunicación) to implement the 'sustainable campus' initiative. This process will involve the installation and evaluation of management and sustainable 'clean production' models and the development of education methodologies for sustainability that can be applied to undergraduate and graduate programs, particularly for teacher training and professionals linked to sustainability sciences. Two more universities are to be added (Universidad de Chile and Universidad Metropolitana de Ciencias de la Educación) (NJESD, Chile).



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IHE performance indexes like the Times Higher Education Index, the QS-index and the Shanghai Index focus on 'research output' and 'internationalisation' but pay no attention to Ranking universities on a sustainability scale. In contrast, the Green League Table is compiled using sustainability indicators by People and Planet (P&P), which is a coalition of UK students. See: <http://peopleandplanet.org/green-league-2011/table>

IHEs are contributing to the development of sustainability competence (see Table 2.5) inside and outside the higher education community through their courses, professional development programmes, community outreach activities, etc.

Generic Sustainability Competence:

- *Competence to think in a forward-looking manner, to deal with uncertainty, and with predictions, expectations and plans for the future.*
- *Competence to work in an interdisciplinary manner.*
- *Competence to see interconnections, interdependencies and relationships.*
- *Competence to achieve open-minded perception, trans-cultural understanding and cooperation.*
- *Participatory competence.*
- *Planning and implementation competence.*
- *Ability to feel empathy, sympathy and solidarity.*
- *Competence to motivate oneself and others.*
- *Competence to reflect in a distanced manner on individual and cultural concepts.*

Table 2.5 Generic Sustainability Competences' based on the ideas of Gestaltungskompetenz developed in Germany (de Haan 2010; Adomssent and Michelsen, 2007).

Finally, more than 200 universities have signed the UNESCO-endorsed Earth Charter as an ethical framework for guiding education and research (www.earthcharterinaction.org). The Talloires Declaration, a ten-point action plan for incorporating sustainability in all IHE activities has been signed by 437 university leaders in over 50 countries.

See: http://www.ulsf.org/talloires_declaration.html

Ranking universities on a sustainability scale.

Summary Notes: Higher Education

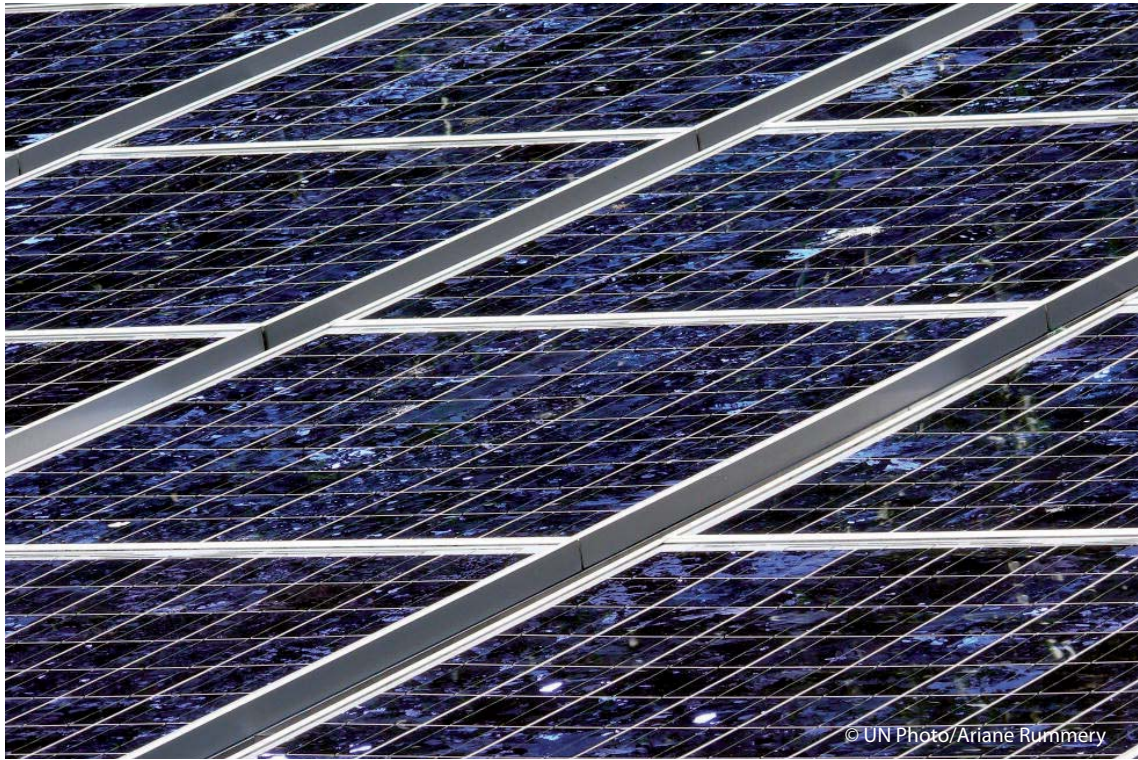
IHEs are beginning to reorient their education, research, operations and community outreach activities towards sustainability. The shift is occurring despite economic pressures and educational reforms pushing for more efficiency and cost-effectiveness, which can stand in the way of this reorientation.

Some universities are using sustainability to organize and profile themselves in a new way.

IHEs are beginning to advance systemic thinking by examining connections, relationships and interdependencies. There are indications that some

IHEs are developing and introducing new forms of interactive, integrative and critical learning that can help people understand and engage in sustainable development.

Teaching and research are placing a new emphasis on real-world challenges to sustainability in the communities that surround campuses. This new focus is dissolving boundaries around the ivory towers and is fostering dialogue between traditional institutions and citizens.



► Technical and Vocational Education and Training

The inter-sectoral and interdisciplinary dimensions of education for sustainable development, which has deep ties with technical and vocational education and training (TVET) is bound to engender new ways of thinking, new social and ethical attitudes, and innovative responses aimed at fostering sustainable development and low-carbon green practices. Consequently, national capacity in TVET should be reformed and strengthened in order to help young people develop relevant skills. UNESCO should support changes in lifestyles, attitudes, behaviours conducive to sustainable development and ensure coherence of the sustainable development mechanisms and policies at national, regional and international levels (UNESCO Leaders Forum, 2011).

Technical and Vocational Education and Training (TVET), or education for the world of work, provides learning and life-skills programmes for young people and adults. TVET is essential for the expansion of skills and development of competencies necessary in rapidly changing labour markets.

TVET is seen as one of the solutions to poverty reduction and a support to socio-economic de-

velopment. Besides technical knowledge and the capacity for productive team work, people must now have a preparation that goes beyond basic literacy and numeracy to include both vocational and social skills, together with values that help build harmonious societies. Increasingly TVET is considered a lifelong learning programme that takes place in schools but also in the workplace.

Seen through the lens of TVET, ESD is a requisite to ensure sustainable livelihoods and occupations. Integrating ESD into TVET is essential to develop knowledge and skills that support economic development and also enable people to improve the quality of their daily lives.

The UNESCO International Meeting of Technical and Vocational Education and Training Experts was held in Bonn, Germany in October 2004. The resulting Bonn Declaration “Learning for Work, Citizenship and Sustainability” defines the role and contribution of TVET to sustainable development. (UNESCO-UNEVOC, 2004)

Many international development programmes and organizations like the UN and the World Bank invest in projects to re-orient vocational education towards the needs of the labour market and, more



broadly, of the community. The UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training assists UNESCO's Member States in upgrading their TVET systems but also in aligning them with the principles of sustainable development. See: <http://www.unevoc.unesco.org>

In comparison to the early DESD years, we see an important shift. Before, ESD advocates were the ones pushing for TVET engagement in sustainability. Today, the push is coming from business and industry. Confronted with environmental crises, resource scarcity, policies requiring reductions of carbon-prints, changing consumer demands plus new green technologies, the private sector is keen to update workers' capacities to better respond to these changes.

Today, the push is coming from business and industry.

Ministries of Education but also of Ministries of Economic Affairs around the world appear to be pushing for a TVET upgrade that includes preparing people for a 'greener' way of producing.

In 2010, the Minister of Higher Education made an urgent commitment to integrating training towards a green economy into Technical and Vocational colleges in South Africa. Green jobs and occupational training within the Further Education and Training (FET) sector is a state priority. Following this there have been attempts to institutionalise ES-related training within state institutions as illustrated by the following example:

The Central Johannesburg College (CJC) is training youth towards artisan opportunities in the green industries. Training of the first group of twenty youths in solar geyser [hotwater systems] installation started in May 2010 at the Alexandra Campus spurred by the Department of Minerals and Energy's project to install one million household solar geysers by 2014. Training has been developed to provide innovative solutions to workforce development needs, by promoting green career and business in the vocational opportunities to youth as part of its mandate. CJC initiated a business plan competition for 50 youth around the theme of green innovation. The scope of green retrofitting includes installation of photovoltaic technology, solar geyser, water harvesting, low energy lighting and cooling systems among other built environment adjustments to meet international compliance standards (Source: NJESD, South Africa)

ESD has become a key and/or integral component of technical and vocational education. Now in Egypt we take in our consideration to implement the sustainability management in: 1- Development the curricula 2- Training the teachers. 3- Equipment (GMES, Egypt).

In some places ESD is taken on board. He became an integral part of the new modular curriculum this item through entrepreneurship, democracy and human rights and increased the fund of practical training. They expect the reports and results analysis (GMES, Bosnia and Herzegovina).

ESD has become a key and/or integral component of technical and vocational education. The promotion of sustainable development has also been incorporated in the national curricula in upper secondary vocational education (GMES, Finland).

Technical and vocational education official guidelines mention SD aspects such as cultural and natural heritage conservation, environmental impact assessment, eco-architecture, agriculture and rural development, landscape preservation, cost-benefit analysis with environmental and social costs included. As far as art school is concerned, an "architecture and environment" curriculum is available (GMES, Italy). See: <http://www.istruzione.it/getOM?idfileentry=217468>

In some countries, vocational education is part of secondary education and ESD is linked to competencies any student needs to be successful after leaving school.

The Life Skills Curriculum addresses many topics related to sustainable development with its various dimensions. In grade 11 there is a unit about vocational and career training. It addresses the impact of work of individuals and society and the need to respect the work and workers as well as to realize the value and benefits of working. In grade 9 there are units that address the election process and how one can exercise it within the school society. Themes of critical thinking and self-employment are also a focus in these subjects (NJESD, Oman)

In contrast, 'business as usual' is reported in some countries, where TVET is not responding to sustainability challenges.

Few TVET institutes are considering ESD as part of improving the quality and relevance of TVET to socio-economic development at the country level (UNIR, UNESCO Regional Bureau of Education, Beirut)

Respondents and *National ESD Journeys* refer to the rise of the green economy as an opportunity for establishing ESD in TVET. Yet we note different viewpoints. Some TVET schools view sustainability as a necessary addition to maintain profitability. Others are more concerned with the world's well-being and finding a successful balance of the '3 Ps', people, planet and prosperity. These two perspectives are likely to result in different interpretations of how learners should be prepared for the world of work.

The European Training Foundation distinguishes five areas in TVET and human capital development policies:

- To promote education geared to developing the values, skills and competences for sustainable development. This includes the promotion of adequate learning environments and the teacher education necessary to make people aware of sustainable development and develop the required competences.
- To promote methods for the identification, forecasting and provision of skills to support the greening of products and services, the growth of green sectors and to improve overall competitiveness in a low-carbon future.
- To make TVET schools agents for local sustainable development and stakeholders in coping strategies for climate change.
- To integrate sustainable development into entrepreneurial learning and business education.
- To include the dimension of sustainable development in the analysis of partner countries' human resource development policies, with a focus on identifying and applying adequate indicators.

(Sustainable Development and Education and Training, ETF Position Paper, Turin 2011. p. 17).



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Summary Notes: TVET

Perhaps the most visible changes linked to the inclusion of ESD can be observed in TVET, human resource development and professional development in the world of work.

Driven by mostly economic interests and technological innovations, companies are beginning to re-orient themselves to what is commonly referred to as the 'green economy' and its related 'green skills' and 'green jobs'.

The demand for a workforce capable of working in such an economy is clearly on the rise. Vocational schools are responding by reorienting their curricula.

From an ESD perspective, it is important to follow this promising trend critically, to make sure the P for People and the P for Planet receive at least as much attention as the P for Prosperity. The social pillar of sustainability needs to be added to the TVET curriculum so that workplaces are equitable.

The new learning arising from this interest in 'green' and 'corporate social responsibility' tends to be competence-based. Students address real issues related to sustainability challenges faced by a business. This form of learning coupled with competence-based assessment can also be of interest for ESD in other contexts.

The idea of TVET schools as agents for local sustainable development merits further exploration in the remainder of the DESD.



► Non-formal learning

In the GMES, non-formal learning was described as all learning initiated by community groups, civil society organisations (CSOs), non-governmental organisations (NGOs) and networks that seek to engage citizens (young and old) in sustainability-related issues. Some of these activities may also involve schools, colleges and universities, but are not part of their curriculum.

It is generally recognized that these learning forms are linked and occur simultaneously, as illustrated in the previous chapters.

Much of the ESD non-formal learning is generated by local municipalities and organizations like museums, environmental education centres, national park systems etc., seeking to enrich their core activities with ESD. Many such initiatives see formal education institutes as natural partners, which results in blended learning – a mix of formal, non-formal and informal.

ESD in Italy is largely carried out as non-formal education at the local level. Many educational projects are conducted- in a synergic action - by NGOs, regional/local institutions, parks, schools, universities, regional environmental agencies, and other local actors (GMES, Italy).

The institutions in jurisdiction of the Ministry of the Environment (Environmental Board, State Forest Management Centre and Museum of Natural History) provide non-formal learning activities for different age groups, mainly for pupils and they also organize SD related training and schooling activities for specific target groups like land owners, small scale entrepreneurs, administrative authorities, teachers etc (GMES, Estonia).

In Egypt, ESD is becoming part of the non-formal education through community learning centers. The number of NGOs participating in ESD has been increasing over the past four years (Regional Synthesis Report, Arab Region).

Media

GMES respondents and case studies also refer to national campaigns and the use of media as a form of non-formal learning in ESD. Governments

and NGOs use media, including social media, to highlight ESD-related topics. Here too, linkages with formal education are considered crucial.

The Tabasco state government generated a work programme that contributed to everyday presence of the issue in the mass media. Notwithstanding a need to improve information quality, this initiative has played a key role in providing information for society stakeholder and being the ESD issue to a broader agenda tending towards responsible citizenship (CS, Mexico).

Sustainable development has more so than other years been a topic for frequent reports and debates in Swedish media during 2010. The independent national public service radio, television and the Swedish educational broadcasting company, as well as commercial television have of their own accord broadcasted documentaries, critical societal reports and debates in order to raise public awareness about sustainable development. One example is the radio program "The Globe" (Klotet) which has discussed topics such as global warming and biodiversity. Earth Hour is the biggest global environmental campaign and in 2010 it engaged 128 countries. In Sweden two-thirds of the municipalities signed on, about 2,000 companies and more than 800 schools participated in the event. In the end 53 per cent of all Swedes turned out their lights during Earth Hour. Teaching materials were produced by the WWF for preschools, primary and secondary schools. Schools registered their participation on the Internet, as well as reported the plans and actions that had been implemented over a longer period of time (GMES, Sweden).

When formal education and non-formal education are made complementary there is greater reciprocation and cohesion between the school and the community. Incorporating local community perspectives and ways of social learning such as cooperative action plans and group solidarity, intergenerational learning processes, e.g. storytelling and dance and song, in formal education enhances relevance (CS, Mali).



The Italian Commission for UNESCO organises every year the «national week» on ESD that gathers hundreds of entities and organisations that are engaged on the ground on educational projects. The UNESCO campaign [provides] a clear picture: there are a significant number of actors (local administrations, NGOs, regional environmental agencies, parks..), that are engaged in education and programs focusing on SD. Educational and cultural events, including seminars, shows, exhibitions, workshops, cinemas are organised in the framework of these programs during the ESD weeks. Schools collaborate with all above mentioned actors outside the “core” formal national curriculum, in accordance with their “scholastic autonomy”, i.e. their opportunity to create self-directed educational paths (GMES, Italy).

[M]ore than 30 media made special reports on ESD (KIS, China)

There is a recognized (by media, business and government and education) national trend toward the inclusion of sustainability in education. It is strongly related to real world problem solving and active/applied learning and includes foci on impacts on human health and quality of life as well as ecosystem health. The local and national media (magazines, newspapers and some television news and youth oriented media and online media) and the education specific media (Chronicle of Higher Education, Inside Higher Education, newsletters and magazines and journals from education associations/organizations) have reported on this trend. (KIS, USA)

The particular type of education is mostly carried out by Non-Government Organizations these include Nature Uganda, Uganda Wild Life Authority, Uganda Wild Life Education Centre in Entebbe, Jane Goodall Institute in Entebbe. NEMA Uganda also carries out education using media like radio, TV and newsletters as well as providing access to a well-stocked library (GMES, Uganda).

In some places, organizations are being proactive partnering with media.

Science constantly provides society with abundant new data about sustainable development. Transferring this data to teachers and students is a difficult task due to the professional language which researchers use, the purpose the data was collected for, and the complexity of the data. Educational systems have faced a great challenge when trying to ensure that scientific data is made available, understandable and useable by teachers. Some educational systems have managed to provide in-service training for teachers which assists them in up-dating their knowledge base. Others have looked to “interpreters”, those who translate research results into useable formats for teachers. These “interpreters” are organizations, authors, digital resource centers, etc. Still others have relied on media to translate into everyday language the most recent scientific insights. (KIS, Norway)

For ESD the media (e.g., television, radio, magazines, newspapers, and the Internet) provide both challenge and opportunity. The challenge is that in consumer society advertising in the media promotes consumption.

The challenge is to counter the mechanisms at work in our society and the role of media and advertising. (KIS, Belgium)

Personal development which may or may not be a result of the educational process is a consequence of many factors including peer pressure, media and advertising, financial conditions, health, etc. (KIS, Norway)

Other educational organizations are creating training manuals and workshops for the media on ESD. For example, UNESCO published *Media as partners in education for sustainable development: a training and resource kit*, which Field Offices piloted (Bird, Richard and Warwick, 2008)

The opportunity is that the media can be partners in ESD advocacy and delivery. In a few places ESD is the subject of media coverage.



At UN level, UNESCO and UNDP Lesotho collaborated in the organization of the workshops on “Media as Partners in ESD”. With this project, UNESCO and UNDP contributed together towards the implementation of the Lesotho ESD policy framework and addressed specifically the important role that the media can play to strengthen its lobbying/ advocacy role of the UN Decade of Education for Sustainable Development (2005-2014). (ESD Section Report to 187th session of the Executive Board of UNESCO)

The UNESCO office in Bamako organized a workshop to support media production on sustainable development for journalists from Mali, Burkina, Guinea, Niger and Senegal. The main objective was to multiply media quality content produced on sustainable development. The workshop included:

- Clear and simple information to understand climate change, its causes and consequences and how to orient teacher training towards sustainability.
- Actions for adaptation and attenuation.
- Basic language on climate change.
- Tools to create better quality of content on climate change.

Recommendations from conferences are also calling for media.



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In October 2010, the UNESCO Office in Phnom Penh supported the Institute of Humanities and Social Sciences of the Royal Academy of Cambodia to organize the 4th National Conference on Cambodia towards Decade of Education for Sustainable Development (CDESD) 2005-2014: Lifelong Learning.

The conference concluded by presenting some practical recommendations to the government and ESD concerned stakeholders. There is a need of media and communications strategy to increase awareness of lifelong learning programmes among young people. The Ministry of Education Youth and Sport and the relevant ministries should strengthen and expand more related lifelong learning programmes for out of school youth to provide them the second chance of education for career developments. The practical concepts of ESD and lifelong learning should be integrated into the education system- formal and non-formal. There is a strong need to conduct more research and studies on ESD to inform the review of related policies and the development of ESD and lifelong learning strategies. (ESD Report to 186th Executive Board.)

Private Sector

The programs and activities with regard to ESD done by the Directorate General of Non-formal and Informal Education are done inside “Community Learning Centres”. [The approach] in two villages in Central Java [focuses on] understanding the potential of the village and on how to design ESD-based business plans. As a result in the two communities production activities [have been undertaken] and some small enterprises such as crystal sugar productions, rabbit husbandry, indigo dye productions, batik industry centre, coffee industry (NJESD, Indonesia).

ESD in non-formal contexts is increasingly linked to private sector initiatives and the development of entrepreneurship. Often the examples refer to learning processes aimed at developing business plans that have sustainability in mind. Empowerment and economic viability are key ingredients in examples provided, particularly from Asia, Africa and Latin America. Community centres and local and regional networks often play a coordinating role in the development and support of these learning activities.

Three examples of non-formal learning in and through ESD from Chile

- In collaboration with the private sector, Casa de la Paz develops educational programs on Sustainable Coexistence that are oriented towards improving relationships between private companies, the community and local government. It also administers a fund called Sueños del Barrio in cooperation with the Sustainable Development Council and a private company focused on issuing grants for projects for improving the local area. Training is provided to the social organizations that receive the grants.
- Corporación El Canelo de Nos implements a social empowerment approach for sustainability with the understanding that it is present in many areas (social, cultural, economic, political and environmental). It develops a set of programs focused on the non-formal sphere with base communities at the neighborhood level. It also implements a program with UNESCO for training teachers in the incorporation of energy saving technologies from the classroom so that they have an impact on the family and community. It also provides environmental education through an educational circuit called Planeta Canelo that is directed at students who are looking to complement their formal education.
- Ecobarrio El Ceibo de Maipú has taken a different approach. This territorial social organization proposes ongoing informal education through daily interaction with the community designed to strengthen ties and provide ecological information. Its theory is that culture can be modified and the way that one lives in the city and relates to the planet and environment can be changed. Its objectives include preparing neighborhood children to promote said changes. El Ceibo proposes sharing popular and academic knowledge and information, engaging in mutual education and supporting young people who are writing theses. It also offers training courses for teachers and students from schools in the municipality of Maipú and to the residents of the Villa 4 Álamos community, which is located nearby (NJESD, Chile).

Much of this non-formal learning takes place at the interface of school-community-private sector and is cross-boundary in nature.

Learning in non-formal learning

Information on the type of learning taking place in the non-formal context was noticeably scarce. Few country case studies, national ESD journeys, key informants and GMESD respondents were able to articulate the key characteristics of this learning.

One conclusion we can draw nonetheless is that much of this learning considers participation in local development, use of local knowledge and recognition of local realities to be crucial. Also, much of this non-formal learning takes place at the interface of school-community-private sector and is cross-boundary in nature.

One of the secrets behind these successes lies in the way in which the ESD processes at Bansunkong have been structured to appeal to the ethno-cultural and socioeconomic contexts of its students and its local community, and in the seamless nature of the transitions between the formal, non-formal and informal teaching and learning activities that take place at the school. In addition, the number and variety of structured, ESD-relevant extra-curricular activities that have been made available by the school to both students and the local community all year round has seen Bansunkong become a “life university” for people of all ages. The school offers an integrated community learning centre, which provides community-sponsored courses and continuing education classes for adults, as well as an on-site laundry and kitchen available free-of-charge with a view to improving hygiene and nutrition amongst the student body (CS, Thailand).

Research designs adopt participatory methods to promote partnership, equity, and reciprocal dialogue and exchange between researchers, educators, and community people. Community people are assisted to identify their environmental and cultural ‘strengths’ that then serve as entry points for learning for sustainability. Case studies and artefacts from the local communities are becoming part of learning processes in formal education. In the case of communities that identified, handicrafts, artworks and curio shops, opportunities for non-formal education and entrepreneurship are increased (CS, Zambia).

In the Dutch ‘Learning for Sustainable Development’ programme the government itself is considered a key stakeholder in ESD. Governments are viewed as a learning organization but are often forgotten as such in ESD. After all, they are responsible for educational and sustainability policies. Equally important, governmental organizations need to learn in order to break out of the same disciplinary and/or sectoral silos that characterize schools and universities, in order to allow for more holistic approaches (The Netherlands).

Summary Notes: Non-formal learning

Nearly all respondents and case studies indicated that ESD in the context of non-formal learning is vital and happening across the globe at various levels.

The review, however, yields little information about the type of learning involved, the way such learning can be designed, or the competencies required to facilitate it.

Nonetheless some trends are worth noting:

The boundaries between non-formal, informal and formal learning are becoming increasingly vague due to:

- schools and universities orienting themselves more towards society and the learning around ‘real issues’ in rich contexts,
- the presence of media, particularly ICT-based media,
- increased emphasis on life-long learning,
- increased involvement of the private sector in education and learning.

It remains to be seen how conducive these trends will be to strengthening ESD. Some are driven by economic rather than sustainability interests, which may be conflicting.

Finally, what type of learning appears most appropriate in this ESD context? Social learning, discovery learning and problem-based learning seem to have much merit, but more research is needed.



EMERGENCE OF NEW PARTNERSHIPS IN SUPPORT OF ESD



Multi-stakeholder Interaction

The inter-sectoral and interdisciplinary dimension of education for sustainable development... is bound to engender new ways of thinking, new social and ethical attitudes, and innovative responses aimed at fostering sustainable development and low-carbon green practices (UNESCO Leaders Forum, 2011).

Around the world, ideas like the 'green economy,' 'the digital age,' 'the knowledge society,' 'communities of practice,' and 'lifelong learning' are leading to a reconfiguration or at least a rethinking of how groups in society can connect and become more innovative, creative and resilient.

It is becoming clear that the search for sustainability cannot be limited to classrooms, the corporate boardroom, a local environmental education centre or a regional government authority, all operating in isolation. Instead, learning in the context of sustainability requires cooperation and synergy between multiple actors in society and the blending of formal, non-formal and informal education. Opportunities for this type of cross-boundary learning expand with increased permeability between units, disciplines, generations, cultures, institutions, sectors and so on.

The previous chapter showed ESD-related activity in schools and universities connecting more and more to the world outside of formal education institutions. NGOs, CSOs and representatives from the private sector are working with formal education systems as well as their usual non-formal and informal learning settings.

Multi-stakeholder social learning is essentially about bringing together people of various backgrounds and with different values, perspectives, knowledge and experiences, both from inside and outside the group or organization, in order to move creatively towards the resolution of an issue for which no ready-made solutions exist. Such learning is a means to involve people actively in deep or fundamental processes of change.

In the GMES, social learning was listed as one of nine options of ESD-related learning. Although it ranked low among the nine, it ranked higher than the more traditional disciplinary and transmissive learning (Figure 2.1 in Chapter 2).



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Multi-stakeholder social learning:

- involves learning from one another together;
- assumes that we can learn more from one another if we do not all think or act alike: people learn more in heterogeneous groups than they do in homogenous groups;
- requires the creation of trust and social cohesion, precisely in order to become more accepting and to make use of the different ways in which people view the world;
- cultivates 'ownership' with respect to both the learning process as well as the solutions that are found, which increases the chance that things will actually take place;
- ideally results in collective meaning making, sense making and change

(Peters and Wals, 2012).

The rapid rise of Regional Centres of Expertise (RCE) across the globe – in early 2012, 100 RCEs had been established - testifies to the potential of multi-stakeholder social learning. RCEs bring together institutions at the regional/local level to promote ESD and build innovative platforms to share information and experiences.

[In order to advance] ESD through multi-stakeholder initiatives – regional and global networks have been created to provide learning spaces for ESD... Regional Centers of Expertise (RCEs) [represent networks] of existing formal, non-formal and informal organizations mobilized to enhance ESD to a specific regional community. See: http://www.ias.unu.edu/sub_page.aspx?catID=108&ddlID=183

Respondents cited other examples of increased stakeholder interaction:

Creation of learning spaces within multi-stakeholder ESD-related networks has led to an improved communication and dialogue in addressing regional and global sustainability issues (UNIR, UNU-IAS).

The increasingly integrated knowledge networks, which include social networks, has greatly improved communication and allowed intellectual networks to form around common themes with much greater speed. This means that stakeholders who traditionally through a lack of time would not have chosen to interact on certain topics, now can add their voices with relative ease so that the perceived size of a movement is larger, which also leads to a stronger draw to peripheral stakeholders (UNIR, UNESCO Field Office, Doha).

Based on the responses to the GMES and the KIS, we can conclude that springing up around the world are many new higher education initiatives and networks offering joint degree programmes, courses, modules and alternative approaches to learning, which all emphasise the social relevance of higher education. The challenge of sustainability is becoming a focus in research and education across the planet.

Examples of hybrid configurations of multiple stakeholders, some connected to schools and universities, some to organizations and some to the world of work, are plentiful:

- the revived university science shops as desks, both virtual and real, where members of the community with limited resources can commission research (<http://www.livingknowledge.org>);
- the networks of community-engaged universities, for example:
 - Centro Boliviano de Estudios Multidisciplinarios (<http://www.cebem.org/>)
 - ACU University Extension Network, (http://www.acu.ac.uk/member_services/professional_networks/extension/Extension)
 - Imagining America (<http://imaginingamerica.org/>)
 - Campus Compact (<http://www.compact.org/>)
 - Global Alliance of Community Engaged Research (<http://communityresearchcanada.ca>)
 - Global Universities Network for Innovation (<http://www.guni-rmies.net/>)
 - Global Universities Partnership on Environment and Sustainability (GUPES) (<http://hqweb.unep.org/training/programmes/gupes.asp>)
 - PASCAL International Observatory (<http://pascalobservatory.org/>)
 - Society for Participatory Research in Asia (<http://www.pria.org/>)
 - Talloires Network (<http://www.tufts.edu/talloiresnetwork/?pid=35;>)
- the transition town movement in the United Kingdom and elsewhere; <http://www.transitionnetwork.org/>
- the centres of expertise focusing on sustainability issues, such as the Regional Centres of Expertise (mentioned above)



The UNEP-led Global Universities Network for Environment and Sustainability (GUPES) was developed to support the mainstreaming of environment and sustainability concerns into teaching, research, community engagement and management of universities globally, by building on the African experiences under MESA. Mainstreaming environment and sustainability concerns for sustainable development - which underpins GUPES, involves a transformative learning process and new ways of thinking about teaching, research and community engagement.

A striking feature of the initiatives being developed particularly within the MESA programme, is what can be described as a 'new kind of teaching and research', which is aimed at community development and problem solving. This feature seems to permeate all disciplines involved in the MESA framework (e.g. law, engineering, science, education, journalism). Evidence of this 'new kind of teaching and research' can be found in the way that participating universities are:

- Enhancing participation in research design and in the conduct of research that benefits communities, and in paying attention to the way that research outcomes are used for community benefit.
- Engaging students in service learning and problem solving projects in 'real life' contexts.
- Forging stronger partnerships with local communities and development groups to identify priorities for research and development work.

GUPES - re-orienting higher education towards sustainability (UNIR, UNEP).

A new kind of teaching and research that benefits and reaches communities has emerged.



ProSPER.Net members have been sharing knowledge, skills, perspectives, experiences and values related to sustainability through the network interaction and joint projects, what increases the potentiality for transformations due to the mutual learning process and working together towards common goals. The networking process enhances collaborative, trans-disciplinary and cross-boundaries undertakings with a multitude of partners, while addressing regional sustainability challenges. Projects that target integration of sustainability issues were certainly enriched by different perspectives arising out of *ProSPER.Net* members' cultural, social, environmental and economic backgrounds, making partners to work on collaborations that are adaptive and flexible enough to incorporate different views, knowledge, contexts, teaching methods and experience. However, although this may be perceived as an advantage, it can also pose challenges, especially when trying to accommodate different stances regarding institutional constraints.

ProSPER.Net - Promotion of Sustainability in Post-graduate Education and Research Network (UNIR, UN IAC, Japan).

MICA is a network of Pemban fishermen in Tanzania, who represent the 50 shehia (small administrative units consisting of 1-3 villages) that use Misali Island Marine Conservation Area. It works to improve fishers' quality of life while working towards natural resource protection. It has been working with Pemban fishing communities for over 12 years and now has 1,561 active members (821 male, 740 female) across all four Districts of the Island. MICA has facilitated establishment of environmental clubs in over 20 primary and secondary schools, and encourages student participation in environmentally education as well mangrove planting (KIS, Tanzania).

Crossing boundaries between different sectors and forms of education and learning is exciting, but not easy, as some respondents pointed out.

The biggest barriers from an NGO viewpoint are the lack of communication among potential ESD stakeholders. School teachers, in many cases, need assistance from knowledgeable experts, local community people, local companies etc., but teachers are too busy to do so. Many private companies have been expressing their willingness to support local schools, but they don't know how to do. In order to overcome such communication problems, local coordinators can play a significant role (GMES, Japan).

► Summary Notes

In the second half of the Decade, ESD is taking place in collaborative, trans-disciplinary, cross-boundary contexts.

This trend reflects the complexity of sustainability challenges – climate change, poverty, food security, etc. – with their ethical, philosophical and political dimensions. They cannot be treated as mere scientific or technical projects. These challenges are fuelling a reorientation towards education, learning and research that can be more responsive to the needs of society. They call for partnerships and coalitions involving a wide range of actors, representing different disciplines, sectors and interests.

'Boundary crossing' opens up new possibilities for learning. Hybrid configurations of multiple stakeholders, some connected to schools and universi-



ties, some to organizations and some to the world of work, can be a source of creativity and innovation.

The types of learning emerging in ESD - interdisciplinary learning, social learning, and problem-based learning - appear to be decisive to facilitating innovation.



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Whole-institution Approaches

This section looks again at the major changes that have come about in the DESD. It focuses on ESD's role in bringing about system change or whole system engagement.

► ESD at the Centre

As described earlier (Chapter 1), ESD is closely related to other 'adjectival' educations. In addition, ESD reflects the local environmental, social, and economic conditions as well as the political realities. As a result, content, concerns, and implementation vary greatly around the world. Nonetheless, respondents mentioned particularly the increasing importance of climate change education, consumer education, entrepreneurial education and disaster risk reduction education. The following excerpts reflect growing interest in these four areas.

[In the end it's about]: protecting the human environment, co-evolution of social and natural communities, democratization of relations, the development of entrepreneurial awareness... (GMES, Bosnia and Herzegovina).

Japan suffered severe disaster by the earthquake and the tsunami. It gave us a chance that we will reconstruct educations in every area in connection with ESD (GMES, Japan).

It is more and more difficult to get resources for promoting «wide» and perhaps «obscure» subjects as SD and ESD. The SD and ESD have to be rather often anchored in more «restricted» themes, such as EE, climate change or energy resources, in order to be better understood and financed. This is, of course, against the horizontal nature of SD and ESD. One challenge is also how to make SD and ESD as natural and positive dimensions of all activities as possible, instead of something that you are all the time «obliged» to do and promote (GMES, Finland).

Increased disaster awareness and preparedness, efforts being made to mainstream DRR in education, etc. are the opportunities for strengthening ESD in the next 4 years (GMES, Egypt).



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For the time being i.e. consumer education is considered as an issue. Also the connection between natural science education and social science. The overall goal for work with ESD in a Danish context is to provide pupils and students with sufficient knowledge and skills to make them able to participate in the democratic debate on distribution of the world's natural resources (GMES, Denmark).

For the future of ESD, it is important to position it in relation to other educations with similar concerns: it serves as the unifying theme.

ESD reflects the local environmental, social, and economic conditions as well as the political realities.



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► Whole system engagement and transition

Four different responses have been identified (Sterling, 2004) to the challenge of sustainability: denial (“no real problem, no need for change”), ‘bolt-on’ (“we should add something about sustainability to what we do”), ‘built-in’ (“important enough to integrate it in our current system”) and whole-system redesign (“this is fundamental and we need to create a new system to deal with it”). All these responses can be found in education and learning around the world.

Integrating sustainability is already a challenge for many schools, universities and companies, re-designing an entire system even more so. Yet in the data generated in the M&E process we see the ‘built-in’ and ‘system redesign’ responses are heavily favoured by ESD proponents.

In some ESD contexts we see attempts to realize full integration of sustainability and whole system redesign:



The key message that comes from the story of Eco-Schools success has to be that for change to happen, power must be disseminated to the point of implementation. Schools are dominated by students. They are the ones who act as the eyes and ears of behavioural change. Develop the schools processes and systems to support student led change. Eco-Schools highlight that ESD is not just about curriculum content, but a whole of school body, whole of school mind set and whole school action process. The case study also acknowledges that change is slow, incremental and is only sustainable if genuine models of participatory learning and decision making form the basis of the process.

The greatest gift a school head teacher can give to his/her students therefore, is the gift of freedom for self-directed and purposeful learning, supported by structures and processes that empower and engage with real life ecological issues.

The lessons of Eco-Schools also highlight that those who create the ecological footprint need to have opportunities to reflect and understand what it means to be part of the environment, the effects one has in all the different interconnected cycles and biomes of life and to be involved in and control of remedial action or proactive measures.

Ultimately, Eco-Schools are a process that becomes a way of life. A cultural paradigm for school administrators to master through delegation and a belief in their teachers and students capacity to change the school from the ground up.

Eco-schools as an example of a whole school approach to sustainability (CS, International NGO).

■ *ESD implies a life pedagogy which recreates the model of the present society and presents a more sustainable civilization project, with social justice and reduction of poverty;*

■ *ESD implies a new idea of curriculum, based on meaningful subjects and interdisciplinary proficiency which contributes to build a feeling of belonging to the Planet;*

■ *ESD implies cooperative, supportive, dialogic and democratic learning processes, which require the participation of all members in the planning, execution and evaluation of education;*

■ *ESD implies new public policies that can articulate the educative potentialities present in schools, civil society, government and in the private sector aiming at activities, projects and plans that intermingle when in action;*

■ *ESD requires a new conception of time and space with flexible cycles that can guarantee different kinds of experiences in environments intentionally organized for the living of sustainable life styles during the whole life (within and outside the schools). (CS, Brazil)*



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SEdA offers a comprehensive program for leaders in education across Canada. The program aims to inspire, create and support a culture of sustainable development in all aspects of the education system. SEdA has a national and international group of advisors who are leaders in ESD to provide advice and ideas on current and successful practices around the world.

The Academy's program was designed by faculty members at York University's Schulich School of Business, the Faculty of Education, the UNESCO Chair on Reorienting Teacher Education to Address Sustainability and the NGO, Learning for a Sustainable Future. SEdA originally worked with senior education leaders to reorient entire school systems to address ESD in five domains:

1. governance (Board Services);
2. curriculum/teaching learning (School Services);
3. human capacity building (Human Resources/Employee Services);
4. partnerships (Community Outreach Services); and
5. facilities (Operations Services).

While the flagship offering of the Academy is the 2 ½ day intensive, residential seminar SEdA is now working with teacher educators across Canada to identify the curricular and pedagogical foundations to support the changes that are anticipated as a result of the systemic/institutional reorienting process.

The Sustainability and Education Academy at York University, Canada is an example of a whole system approach to sustainability (UNESCO Chair Report, Canada).

The International Network associated with the UNESCO Chair on Reorienting Teacher Education to Address Sustainability is comprised of teacher education institutions (TEIs) from about 65 nations around the world. The member institutions work to incorporate sustainability into their programs, practices and policies. Each member institution addresses environmental, social, and economic contexts within their extended spheres of influence to create locally relevant and culturally appropriate teacher education programs for both pre-service and in-service teachers. (UNESCO Chair Report, Canada)

Meaningful progress towards sustainability can best be achieved when multiple actors engage in a whole system redesign.

In some countries and provinces, the systemic change that has taken place in relation to ESD is remarkable.

With the support from The Prime Minister, the Ministry of Education conducted six international seminars on GNH in December 2009. Through the strategies derived from the seminars, the Ministry conducted five day workshops for all the five hundred plus Principals, College Directors and selected lecturers. The participants formulated Green School For Green Bhutan concept and expressed their full commitment. ESD/GNH has been adopted as a national priority. Green School concept, GNH/ESD, is an integral part of performance management system that draws a lot of inputs from the School Self-assessment. The school self-assessment tools have been oriented to take in GNH/ESD values and process. All schools make GNH/ESD plans and review these plans bi-annually (GMES, Bhutan). See: 1. School Self-Assessment 2. Guidelines for Educating for GNH in: www.education.gov.bt

Clearly these shifts represent a major challenge for existing systems – schools and education systems - and face a number of obstacles. Yet respondents refer to windows of opportunity and the early signs of a change in paradigm.



The key barrier for strengthening ESD includes the change of existing educational paradigm - from transfer and learning of facts which does not stimulate creative social activity leading towards changes, to education in which critical questioning, thinking and making conclusions is expected, that is the education enabling the freedom of thinking, understanding of reality and interrelations among environment, society and economic development (GMES, Croatia).

... it soon became clear that the school and the learning outcomes of its students faced systemic challenges that could not be addressed through reforms to one year level alone, nor would one year be sufficient to build truly sustainable mind-sets on the part of students. For this reason, a case study approach was applied to the entire school, and supplemented with a new pedagogy and a rights-based approach to education via the incorporation of the teacher-learning method (TLM) and the Child Friendly School Approach. The TLM is a pedagogical approach that entails a mutual learning experience for both teacher and student. In practice, this approach requires that teachers pass through same the cycle of learning that they themselves will pass on to their students. In the classroom, it also positions the teacher as a "learning facilitator" as opposed to the "educator" as demanded by more traditional pedagogies, which can be useful when attempting to transition from a rote-learning based education system to a more participatory, holistic system of student-centered critical inquiry (CS, Thailand).

► Summary Notes

At the beginning of the DESD, ESD was viewed mainly as an important topic to add to existing educational structures and contexts. ESD sometimes competed with other adjectival educations. Now there is a sense that ESD does not represent yet another 'education' but rather a mechanism for engaging people in sustainability, using a range of innovative approaches to teaching and learning. This is certainly the case for what we can call deep and inclusive ESD.

The analysis shows that the 'built-in' and 'system redesign' responses are heavily favoured by ESD

proponents.

During the course of the DESD, as ESD is incorporated into educational systems, there is an apparent shift towards a more fundamental rethinking of the key principles and assumptions underlying these systems.



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It appears that the introduction of 'whole institution approaches' to ESD brought the realization that meaningful progress towards sustainability can best be achieved when multiple actors engage in a whole system redesign. Such a redesign requires visionary leadership, social networking, new forms of research and high levels of participation.

Redesign also requires many of the interactive, integrative and critical forms of learning that have emerged in the context of ESD in the past few years. In parallel, there is a movement towards cross-boundary learning whereby formal, informal and non-formal learning increasingly blend together.

As a result of these parallel and inter-linked movements, ESD as an 'umbrella' education has the potential now to become a driving force of change and innovation in education, teaching and learning.



CONCLUDING REMARKS AND WAYS FORWARD



*"We cannot solve our problems with the same thinking we used when we created them."
Albert Einstein*

General findings

- **Education for Sustainable Development is seen increasingly as a means to renew education, teaching and learning** in ways that allow schools, universities, vocational education and training institutes, communities and businesses to face challenges to sustainability. These challenges demand we learn to deal with change, complexity, controversy and uncertainty. As a result, a wide range of approaches are used in ESD, including systems thinking-based learning, values-based learning, problem-based learning, critical thinking-based learning and social learning. In some parts of the world, incorporating sustainability or ESD into the curriculum is accompanied by a co-evolution of pedagogy towards more learner-centred and participatory approaches. ESD has become a catalyst for educational innovation in certain settings. The discourse has shifted from ESD as merely an addition to existing curricula to ESD as an opportunity for rethinking education.
- **ESD is seen as a potential umbrella of education approaches focused on the wellbeing of the planet and people.** ESD is no longer seeking its niche, as it was in the first years of the UN Decade of ESD. Given the world's increasing concern with SD issues, ESD appears well positioned to play a synergizing role among a wide variety of sub-fields of education. These include environmental education, global citizenship education and, more recently, consumer education, climate change education and education for disaster risk reduction.
- **The 'E' in ESD is interpreted in different ways around the world** and varies according to local conditions. One determining factor is how much space is allowed for learner participation and self-determination. When this space is narrow, more transmission-oriented, instructional modes of ESD will result. When it is broad, ESD will be characterized by autonomous thinking and knowledge co-creation. The latter versions of ESD call for alternative forms of teaching, learning and stakeholder interaction.
- **Boundaries between schools, universities, communities and the private sector are dissolving in many countries.** Teaching and research in institutions of higher education have a new focus on sustainability and real-world issues. Contributing trends: the call for lifelong learning; globalization and ICT-mediated social networks; the call for relevance in education in general; and the increased interest of

the private sector in human resource development. The resulting 'boundary-crossing' is reconfiguring formal, informal and non-formal learning, as well as changing stakeholder roles and public-private relationships. This new configuration provides a powerful platform for ESD. The technical report cites examples of multi-stakeholder social learning in the context of ESD, showing how different societal groups find and complement each other in creating local ESD and SD responses.

- **Interest is growing in 'whole institution approaches' or 'whole system approaches' to ESD and sustainable development.** The trend is linked to the realization that meaning-

ful progress comes only when existing practices, goals and values are questioned, and new ones created with broad participation. As many respondents suggest, and indeed show, this breakthrough can best be achieved when multiple actors engage in a whole-system redesign. For schools and universities, the redesign spans curriculum, campus operations, organizational culture, leadership and management, community relations, research and assessment. Today, worldwide interest in moving towards sustainable 'green' growth holds the promise of a major reorientation of our economies and societies. ESD is well-positioned to play a key role in such a transition.



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Context-specific findings

- **ESD has begun to find its place in Early Childhood Care and Education (ECCE).** Conditions vary greatly around the world, but data provided by representatives of the sector show the promise of ESD in ECCE.
- **In primary and secondary education, ESD is increasingly recognized as a valuable source of innovation in teaching and learning.** Around the world, increased attention to sustainability-related subjects is coinciding with a call for educational innovation and stronger links between school and community. These trends may or may not be causally linked, but there is evidence that associating them can reinforce all three.
- **The inclusion of ESD is having visible impact in TVET and human resource development in the world of work.** Driven mainly by economic interests and technological innovations, companies are beginning to move towards the 'green economy' and its related 'green skills' and 'green jobs'. The demand for a 'green' workforce is clearly on the rise and vocational schools are adapting their curricula.
- **Colleges and universities are starting to make more systemic changes towards sustainability, and developing new relationships with their communities.** Institutions of higher education (IHEs) are addressing local sustainability issues but also using their global networks to benefit from perspectives and expertise elsewhere. At the same time, IHEs are developing and introducing new forms of learning that can help people understand and engage in sustainable development. This new

kind of teaching and research, which is aimed at community development and problem solving, is dissolving the boundaries between IHEs and communities.

- **The boundaries between non-formal, informal and formal learning become increasingly vague** as education institutions reorient towards society and refocus learning on real issues that challenge the sustainability of both local and global communities. Other contributing factors include the presence of media, particularly ICT-based media; increased emphasis on life-long learning; and the rise of the private sector's involvement in education and learning. It remains to be seen whether these trends will be conducive to strengthening ESD;

some are driven by economic interests which may be conflicting. In this context, social learning, discovery learning and problem-based learning seem to be the most relevant types, but more research is needed.

- **Within the UN system ESD is far more part of the discourse and project implementation than it was two years ago.** Findings suggest a paradigm shift towards more inter-sectoral, cross-boundary and participatory forms of engagement. Various agencies are seeing a role for ESD in responding to emerging themes and issues like the green economy, climate change, disaster risk reduction, integral water management, sustainable resource governance, etc.

Ways forward

The data collected for this report show that many individuals, schools, NGOs and governments from local to federal levels are stepping forward to support the evolution of education to create a more sustainable future. These successes point to ways forward for ESD and the DESD.

Because a more sustainable world is a moving target with new challenges emerging, resources diminishing and human population growing, governments and educational institutions will constantly need to recalibrate their visions and action plans. We have to learn our way forward toward more sustainable societies.

As the DESD approaches 2014, its final year, continued support for ESD is crucial. Governments and stakeholders must further ESD's development as a catalyst for innovation and transformation. A range of interactive, integrative and critical forms of learning are emerging. They seem essential for reorienting education, as well as everyday routines in schools, communities and workplaces, towards sustainability. Hence, one top priority to guide the way ahead is capacity-building for Ministries of Education and key change agents, linked to forms of learning identified in this report: problem-based learning, multi-stakeholder social learning, interdisciplinary learning, action learning and critical thinking-based learning.

Within communities, one of the roles of ESD is to help citizens deal with complexity, controversy and uncertainty that go along with community-based decision-making. ESD should also focus on empowering and equipping citizens to transform



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their community and beyond for the well-being of the planet.

To support a wide range of ESD-related activities, ESD stakeholders can share their wealth of methods, tools, guidelines, learning processes and lessons learned. At the same time they can reflect on and absorb lessons learned from other ESD-related educations and fields. ESD can be a motor

for educational reform, merging actions of various stakeholders from a wide range of disciplines and career backgrounds into a common goal.

Equity of access to education is a pre-condition of ESD. The expanding world of social media and open source internet-based platforms is offering new opportunities for access to education. Governments need to support these new methods and link them to ESD to ensure that individuals, civil society organizations, and researchers worldwide can use and benefit from the latest technologies and ICTs, as well as exercise their abilities to create and share new knowledge. New technologies and ICTs are especially important to today's youth and to ESD. ICTs promote student-centred learning and appear to be speeding the rate of educational change.

Fostering studies to provide qualitative and quantitative data will strengthen the evidence base showing ESD can produce academic gains as well as boost people's capacities to support sustainable development. As the evidence base expands, policies backing ESD will become more robust and widespread. This in turn will accelerate curriculum innovation and encourage wider adoption of the learning and processes highlighted in this report. As the research becomes available, governments and ESD stakeholders will have to step up efforts to better communicate the potential of ESD as quality education.

Whole school and whole system responses to ESD have proven effective at the pilot level: they improve academic results and bring about positive behaviour changes linked to sustainable practices. Governments need to support these promising efforts to scale up and use more widely whole-school and whole-system approaches to ESD.

As ESD becomes a stronger component of primary, secondary, higher and TVET education, governments need to reflect ESD in assessment and evaluation efforts. Traditional assessment and monitoring and evaluation systems must be modified to reflect the greater complexity of sustainability content and skills in curriculum. The balance between components of sustainability must also be maintained (e.g., ensuring the three Ps of planet, people, and prosperity are balanced in TVET).

Governments are scrutinizing expenditures carefully in this time of global financial instability. For years, education has been considered one of the best investments a country can make in its future. Currently, ESD is seen as a good investment. As the world discusses green economies, it is evident that a sustainably literate workforce is essential

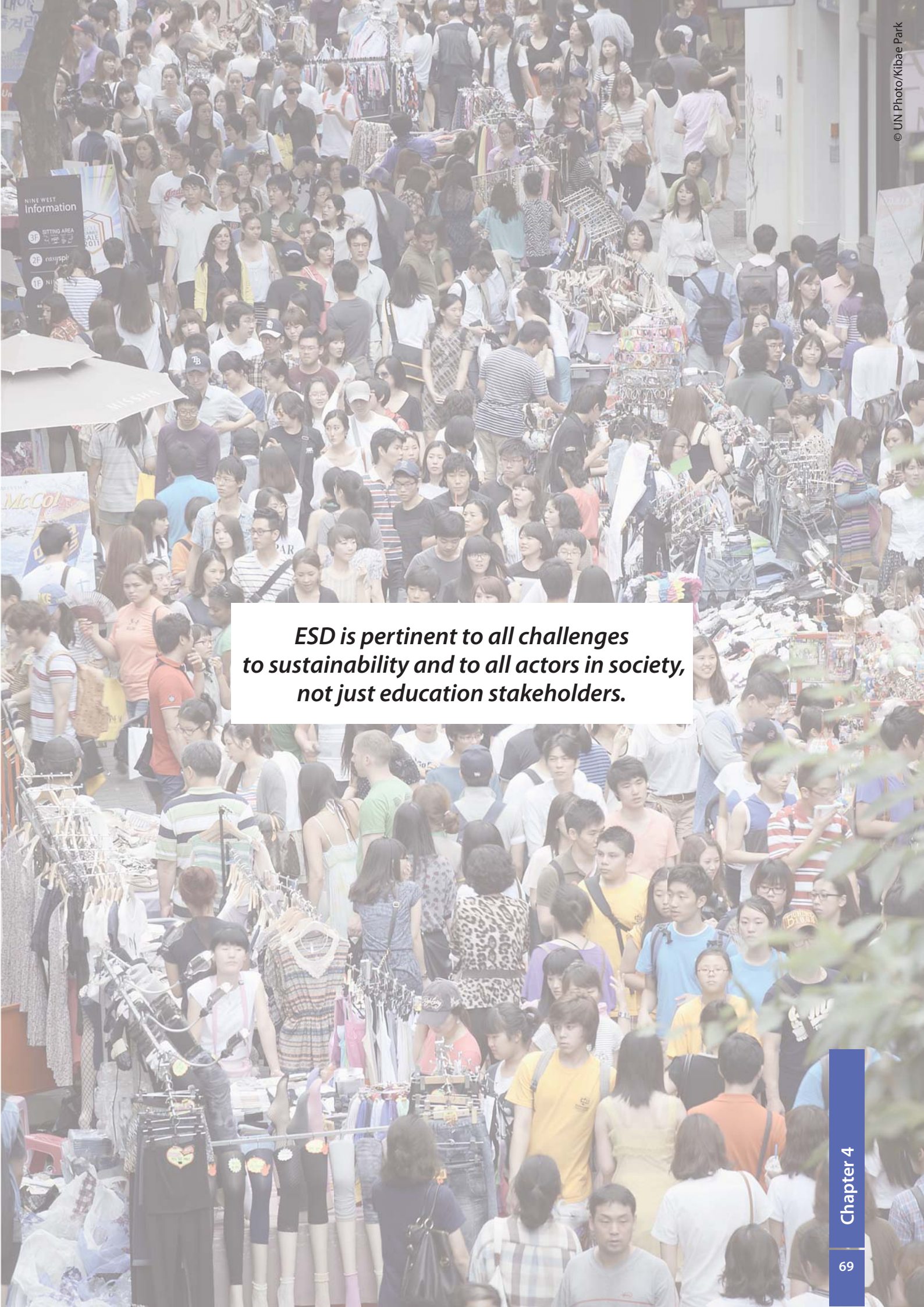
now and in the future. TVET and training with an ESD perspective, offering both hard and soft skills, is needed in green economies and green societies.

In tight financial times, UNESCO, and any actor in ESD, should identify key change agents and strategic leverage points for particular initiatives and then work with those to improve their action, reach and efficiency. Of course, everyone works within their sphere of influence, so the key change agents change with scale. Planning for synergistic activities with large multiplier effect will improve returns on investment.

Efforts should be made to work within climate change, biodiversity, and disaster risk reduction education to develop them as concrete examples of ESD.

Every day ESD becomes more relevant, as we are a long way from turning around negative trends (e.g. ecosystem degradation and growing social and economic inequities). ESD is pertinent to all challenges to sustainability and to all actors in society, not just education stakeholders. Twenty years ago Agenda 21, the official document from the Earth Summit held in Rio de Janeiro, included Promoting Education, Public Awareness and Training as *one* of 40 chapters; yet education was also a crosscutting theme in the remaining chapters. Each chapter outlines a thematic area that is important for progress to create a more sustainable world (e.g., agriculture and waste). The education community must do its part and so must other communities (e.g., research, agriculture, finance etc.). Coordination of those efforts is also important, especially as efforts are scaled up. UNESCO and other UN Agencies can help with the coordinating efforts convening and connecting stakeholders and experts as well as capacity-building and supporting a coherent educational response to challenges to sustainability locally and globally.

Although ESD is growing, evolving and maturing, it is not implemented evenly across the board. A limited group of ESD stakeholders have given vitality to ESD through initial stages and thus far in the DESD. Member States need to expand ESD by linking ESD to (1) the wider educational agenda and (2) the wider development agenda. These linkages become increasingly important as 2014 with the end of the DESD and 2015 with the end of EFA and the MDGs approach. It is evident that the countries of the world need to identify new goals and internally agreed upon processes for moving forward to confront the educational and sustainability challenges of this century. ESD provides many opportunities in this endeavour.



ESD is pertinent to all challenges to sustainability and to all actors in society, not just education stakeholders.

ACRONYMS

3Ps	People, Prosperity and Planet
APEX	Accelerated Programme for Excellence
CC	Climate Change
CEE	Centre for Environment Education
CJC	Central Johannesburg College
CRDP	Centre for Educational Research and Development
CS	Case Studies
CSO	Civil Society Organization
DESD	United Nations Decade of Education for Sustainable Development
DRR	Disaster Risk Reduction
ECCE	Early Childhood Care and Education
ECD	Early Childhood Development
ECE	Economic Commission for Europe
EE	Environmental Education
EFA	Education for All
EPD	Environment, Population and Sustainable Development for Education
ESD	Education for Sustainable Development
ETF	European Training Foundation
FAO	Food and Agriculture Organization
GUNI	Global University Network for Innovation
GUNES	Global Universities Network for Environment and Sustainability
GMEF	Global Monitoring and Evaluation Framework
GMES	Global Monitoring and Evaluation Survey
IBE	UNESCO International Bureau of Education
IAC	United Nations Inter-Agency Committee
ICT	Information and Communication Technology
IHE	Institution of Higher Education
IIS	International Implementation Scheme
IJSHE	International Journal of Sustainability in Higher Education
ILO	International Labour Organisation
ISCED	International Standard Classification of Education
ITP	International Training Programme
JFIT	Japanese Funds in Trust

KIS	Key Informant Survey
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MESA	Mainstreaming Environment and Sustainability in African Universities
MEEG	Monitoring and Evaluation Expert Group
NEPA	National Environment and Planning Agency
NESDJ	National ESD Journeys
NGO	Non-Governmental Organization
NJESD	National Journeys toward Education for Sustainable Development
OMEP	Organisation Mondiale pour l'Éducation Préscolaire
PERL	Partnership for Education and Research about Responsible Living
RCE	Regional Centre of Expertise
REDIES	Network of Sustainable Institutions of Higher Education
SD	Sustainable Development
SEES	School of Environmental and Earth Sciences
SNCAE	Sistema Nacional de Certificación Ambiental de Establecimientos Educativos
TVET	Technical and Vocational Education and Training
UG	University of Guyana
UN	United Nations
UNAIDS	United Nations Joint Programme on HIV/AIDS
UNCED	United Nations Conference on Environment and Development
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEVOC	UNESCO International Centre for Technical and Vocational Education and Training
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNIR	Internal review of the contributions of UN agencies to ESD
UNLD	United Nations Literacy Decade
UNU	United Nations University
USM	University Sains Malaysia

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APPENDIX 1: THE UN CONTRIBUTION TO THE DESD



Around the world, UNESCO has helped integrate sustainability principles and practices into education plans and programmes. It has reinforced Education for Sustainable Development (ESD) implementation at national and regional levels. Eight

years within the decade, an increasing number of Member States are now putting ESD policies into effect; the demand for policy advice on ESD is growing fast. Many UN entities have developed their own substantial contributions to the DESD.

Selected Achievements

- The YouthXchange initiative by UNESCO and UNEP promotes sustainable lifestyles through training workshops and joint projects in over 45 countries. It provides information case studies and useful tips around topics relevant to young people such as food and drink, travel and transport, leisure and entertainment. The YouthXchange guidebook has been translated into 22 languages and distributed to over 400,000 young people. This series is produced also for educators, teachers, trainers and youth leaders around the world.
- 100 Regional Centres of Expertise, designated by the United Nations University to promote governance, collaboration, research and development and transformative education, provide local networks for institutions and practitioners engaged in ESD. An RCE is a network of existing formal, non-formal and informal education organizations, mobilised to deliver ESD to local and regional communities. A network of RCEs worldwide will constitute the Global Learning Space for Sustainable Development.
- 80 universities in 40 African countries worked together to integrate ESD into their teaching as part of UNEP's Mainstreaming Environment and Sustainability in African Universities (MESA) Partnership Programme. It was developed to support the mainstreaming of these concerns into teaching, research, community engagement and management of universities in Africa. Some universities have already transformed their curricula to reflect environment and sustainability concerns.
- The UNESCO-supported Global Innovation Network for Innovation (GUNi) has compiled four volumes of ESD-oriented innovation in higher education. GUNi comprises UNESCO Chairs, higher education institutions, research centres and networks involved in innovation and the social commitment of higher education. It has 214 members in 79 countries and is represented in all five UN regions.



■ UNESCO’s ESD and Teacher Education UNESCO, supported by Japanese Funds-in-Trust, assisted in the implementation of activities with an impact on 34 Member States. The main outputs of these activities were 9 workshops, 3 networks created, one forum and 6 manuals and publications. These projects reached more than 3000 people including policy makers, teacher educators, experts, trainee teachers and journalists.

[UNICEF has contributed to ESD through quality education, gender mainstreaming and girls’

empowerment initiatives within the Basic Education and Gender Equality Programme. Beneficiaries are all children up to the age of 18 years, teachers, educators, parents, communities, employers – in other words, all those who have a role to play in determining the structure, content and process of education (formal, nonformal and informal). Forty seven countries that are adapting the Child Friendly Environment have incorporated climate change and environmental education into their curricula. Further emphasis is placed on those most marginalized by climate change.]

► Specific areas of UNESCO-led achievement

Integration of ESD

There has been marked improvement in the capacity of planners and administrators to integrate ESD into national/local education policies, teacher education programmes and school activities as a result of capacity building initiatives in many countries around the world. The National Journeys case studies and the ESD Lens tool (<http://unesdoc.unesco.org/images/0019/001908/190898e.pdf>)

in its various language versions (English, French, Spanish, Russian, Chinese, Arabic and Vietnamese) have been well received and form a good basis for UNESCO’s policy-review activities in ESD.

UNESCO’s *ESD Lens* provides the basis for policy-makers, administrators and practitioners to review national policies and curricula to integrate ESD. It contains different kinds of review tools that can be used by different stakeholders in educational planning and implementation.



Illustration from page 7 ESD Lens: A Policy and Practice Review Tool.



ESD in practice

Good practice in ESD (e.g. in climate change education and biodiversity) has been strengthened through activities of the UNESCO Associated Schools (ASPnet) and others. UNESCO has made good practices available through its websites and in publications. This has also boosted capacities of policymakers and practitioners.

Climate Change Education and Disaster Risk Reduction

Climate Change Education in the context of ESD has developed into a strong focus of UNESCO's work in ESD. UNESCO is implementing a number of activities in this field at global, regional and country level. A number of high-quality UNESCO materials for Climate Change Education in the context of ESD are being made available to decision-makers and practitioners (e.g. Climate Change in the Classroom: UNESCO

Course for Secondary Teachers on CCESD). See also: Climate Change Starters Guide <http://unesdoc.unesco.org/images/0021/002111/211136e.pdf>

Moving towards green societies

As economies move towards more sustainable models, greening Technical and Vocational Education and Training (TVET) is an increasingly vital area of work. Activities to green TVET can show the potential and benefits of ESD with particular immediacy by providing skills needed to reorient production processes. UNESCO is providing guidance and good practice examples in this area. See: www.TVETipedia.org

UNESCO is also working on an international review of skills formation for green development that will map policies and produce tool kits for curricula. It is developing international guidelines for green skills. (UNESCO, 2011b, p.20) It is supporting the reorientation of teacher education towards sustainability.

The overall goal of the UNESCO Strategy for the Second Half of the DESD is to support Member States and other stakeholders in addressing global sustainable development challenges at regional, national and global level through ESD, thus addressing the challenges of learning for bringing about a more sustainable world. Key areas of strategic action include:

- Enhancing synergies with different education and development initiatives and strengthening partnerships among ESD stakeholders
- Developing and strengthening capacities for ESD
- Building, sharing and applying ESD-related knowledge
- Advocating for ESD, and increasing awareness and understanding of sustainability

UNESCO brings the following features to its implementation of the DESD:

- Ability to link implementation of concrete activities with upstream policy change.
- Focus on building institutional capacity, which is monitored and evaluated.
- Wide convening capacity.
- Extensive field network for supporting ESD in all the UNESCO regions.

UNESCO National Commissions have been key partners in the promotion and implementation of the DESD at national and regional levels. At national level, National Commissions have helped the establishment of national Decade committees; indeed, some are members of such committees.

As a vital link between UNESCO programmes, national institutions, NGOs and civil society at large on various issues related to ESD, National Commissions have played advisory and advocacy roles, and have provided a link or interface with governments, informing and influencing decision-makers, including ministers of education, science, culture, environment, trade and finance. Some National Commissions, moreover, are helping to strengthen international cooperation towards the development of innovative policies and programmes, and the practice of Education for Sustainable Development.



The UN Inter-Agency Committee for the DESD

The UN Inter-Agency Committee (IAC) for the UN Decade of Education for Sustainable Development is a platform and collaboration mechanism that brings together 22 UN agencies to support the Decade. The IAC, focusing on the educational aspect of sustainable development, develops a common vision, principles, and values on ESD and promotes the DESD as a shared objective and agenda of the UN system. It seeks to ensure coordination of the DESD within the UN system,

to embed the ESD agenda into the work of UN agencies, and to emphasize the role of ESD and its implications for all forms, levels and settings of education. In this context, joint work has been undertaken focusing on education activities, for instance in the areas of higher education, climate change, biodiversity, sustainable consumption, sustainable urbanization, rural development and health promotion – to name a few.

IAC members

Food and Agriculture Organization (FAO)
www.fao.org

International Labour Organization (ILO)
www.ilo.org

Joint United Nations Programme on HIV/AIDS (UNAIDS)
www.unaids.org

United Nations Children's Fund (UNICEF)
www.unicef.org

United Nations Convention on Biological Diversity (UN CBD)
www.cbd.int

United Nations Convention to Combat Desertification (UNCCD)
www.unccd.int

United Nations Department of Economic and Social Affairs (UN DESA)
www.un.org/en/development/desa

United Nations Development Programme (UNDP)
www.undp.org

United Nations Educational, Scientific and Cultural Organization (UNESCO)
www.unesco.org

United Nations Environment Programme (UNEP)
www.unep.org

United Nations Framework Convention on Climate Change (UNFCCC)
www.unfccc.int

United Nations Global Compact
www.unglobalcompact.org

United Nations High Commissioner for Refugees (UNHCR)
www.unhcr.org

United Nations Human Settlements Programme (UN-HABITAT)
www.unhabitat.org

United Nations Population Fund (UNFPA)
www.unfpa.org

United Nations International Strategy for Disaster Reduction (UNISDR)
www.unisdr.org

United Nations Institute for Training and Research (UNITAR)
www.unitar.org

United Nations University (UNU)
www.unu.edu

World Food Programme (WFP)
www.wfp.org

World Bank
www.worldbank.org

World Health Organization (WHO)
www.who.int

World Trade Organization (WTO)
www.wto.org



In advance of the UN Conference on Sustainable Development the Inter-Agency Committee for the DESD prepared a comprehensive joint input into the Zero Draft of the outcome document. It is available on the website of the conference www.uncsd2012.org.

As the DESD progresses and the ESD evolves, the IAC has noted changes in ESD

Initially seen as a separate education entity, ESD is now more than ever seen as a set of learning skills, perspectives and values to be intrinsic to quality education and enable current and future generations to live and contribute to sustainable and democratic societies and livelihoods. While SD and climate change are global issues, the solutions are local and national and must be addressed through all educational mechanisms (formal, informal, non formal). Reorienting education to address sustainability requires understanding local contexts, including traditional knowledge and ensuring democratic participation. (UNIR, UNICEF)

The IAC has also noted changes in processes and strategies that are effective for partnering with organizations to promote and advance ESD. UNEP

recently collected lessons learned and recommendations related to ESD. They described eight challenges related to ESD learning and processes that reflect the current direction of ESD. They are common to UN Agencies involved in ESD:

Building on existing structures, programmes, processes and research experience: This has particularly been helpful in Africa, where, for example, the Mainstreaming of Environment and Sustainability in African Universities (MESA) initiative drew from the environmental education work of leading universities. The *Education for Sustainable Development Innovations Toolkit: Programmes for Universities in Africa* serves as a key learning resource.

Participatory processes as opposed to a prescriptive approach: Currently, the SIDA- supported International Training Programme (ITP) for ESD in higher education involves university lecturers from several universities (mainly from Africa and Asia). The lecturers train and are expected to initiate transformative change projects in their respective universities.

Integrated and holistic conception and approaches to sustainable development: Starting points may include the formulation of Sustainable Development Goals to harmonize social, environmental and economic objectives.

Recognition of diverse contexts: Initiatives aimed at reorienting higher education to address sustainability need to be appropriate for local contexts.



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Responsiveness: Programmes must actively and effectively respond to changing contexts and needs.

Equal attention to both processes and products: Results-based management processes make it tempting to focus on easily measurable products. But underlying processes are often more important.

Continuous monitoring, evaluation, research and flexibility: These are key for improving processes and products.

Keeping up-to-date with emerging paradigms and concepts in the sustainability discourse: Relevance is paramount.

Summary Notes

Within the UN system, ESD is far more part of the discourse and project implementation than it was two years ago.

The various agencies in the UN system are seeing a role for ESD in responding to emerging themes and issues such as green economies, climate change, disaster risk reduction, integral water management, sustainable resource governance and a range of others.

Here too, findings suggest a paradigm shift towards more inter-sectoral, cross-boundary and participatory forms of engagement.

Governments around the world are calling for 'evidence' that ESD 'works' to change learning

behaviour, lifestyles and the way organizations work. Developing research and appropriate monitoring, evaluation and indicator schemes is a constant priority.

More research is needed to establish clearly the link between ESD and quality education, and between ESD and other items on national education and development agendas. This will increase ESD's chances of being mainstreamed.

Communicating the potential of ESD will continue to be an important task. It will become easier as the evidence base of ESD's benefits grows.

APPENDIX 2: DATA SOURCES



Respondents to Surveys of Member States

Country	Email ¹ Survey	GMES
AFRICA		
Benin		
Botswana	X	
Burundi		X
Cameroon	X	
Cape Verde	X	
Chad		X
Congo		X
Gambia		X
Guinea		X
Madagascar	X	
Mali	X	X
Namibia		X
Niger		X
Nigeria		X
Seychelles	X	
Sudan		X
Togo		X
Uganda		X
Zambia		X
Zimbabwe	X	X

Country	Email ¹ Survey	GMES
ARAB STATES		
Algeria	X	X
Bahrain	X	
Egypt		X
Iraq	X	
Jordan	X	X
Kuwait	X	X
Lebanon	X	X
Mauritania	X	
Oman	X	X
Palestine		X
Qatar		X
Sudan		X
Syrian Arab Republic	X	
Tunisia		X
United Arab Emirates		X

1. An email survey sent to UNESCO National Commissions and Permanent Delegations in April 2011.



Country	Email Survey	GMES
ASIA PACIFIC		
Afghanistan	X	X
Australia	X	
Bangladesh		X
Bhutan		X
China	X	X
Fiji	X	X
Indonesia	X	
Japan		X
Republic of Korea	X	X
Lao People's Democratic Republic	X	
Maldives		X
Mongolia		X
Myanmar		
New Zealand		X
Nepal		X
Pakistan		X
Philippines	X	X
Sri Lanka		X
Thailand		
Timor-Leste		X
Tonga		X

EUROPE AND NORTH AMERICA		
Armenia		X
Austria	X	X
Belgium	X	
Bosnia and Herzegovina	X	X
Bulgaria		X
Croatia		X
Cyprus	X	
Denmark		X
Estonia	X	
Finland		X
France		X

Country	Email Survey	GMES
Georgia	X	
Germany	X	X
Hungary	X	
Italy	X	X
Kazakhstan		X
Latvia	X	X
Lithuania	X	
Malta	X	X
Monaco	X	
Montenegro		X
Netherlands	X	X
Norway		X
Poland	X	X
Spain		X
Slovenia	X	
Sweden	X	X
Switzerland		X
United Kingdom		X
United States		X
Uzbekistan	X	
Former Yugoslav Republic of Macedonia		X



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Country	Email' Survey	GMES
LATIN AMERICA AND THE CARIBBEAN		
Antigua and Barbuda		X
Argentina	X	X
Bahamas		X
Brazil		X
British Virgin Islands		X
Chile	X	X
Colombia	X	X
Costa Rica		X
Cuba	X	X
Dominican Republic	X	X

Country	Email' Survey	GMES
Ecuador		X
Guatemala		X
Honduras	X	X
Jamaica		X
Mexico	X	X
Panama		X
Peru	X	X
Saint Kitts and Nevis		X
Trinidad and Tobago		X
Uruguay		X
Venezuela (Bolivarian Republic of)		X

Key Informant Survey (KIS)

Australian Association for Environmental Education	Australia
DEEEP Developing Europeans' Engagement for the Eradication of Global Poverty	Belgium
ITECO	Belgium
UNESCO Chair in Special Education Needs – University of Buea	Cameroun
UNESCO Chair in Reorienting Teacher Education towards Sustainability - York University	Canada
China National Working Committee for UNESCO	China
University of the South Pacific – School of Education	Fiji
The OKKA Foundation	Finland
Institut EDIG Université de Bordeaux 3	France
Solidarité Laïque	France
Leuphana University of Luneburg (3)	Germany
Fair Trade Hellas	Greece
UNESCO Chair ICT in Education for Sustainable Development – University of Crete	Greece
Centre for Environment Education (CEE)	India
EcoSchools International	International based in Denmark



International Association of Universities	International based in France
Soka Gakkai International	Japan
Islamic Information Centre (IIC)	Malaysia
Centro de Investigaciones Tropicales – Universidad Veracruzana	Mexico
Coordinacion Universitaria para la Sustentabilidad – Universidad Veracruzana	Mexico
Instituto de Investigaciones en Educacion – Universidad Veracruzana	Mexico
Universidad Veracruzana – Vicerrectoría Región Veracruz	Mexico
OPEN Universiteit (OUNL)	Netherlands
PERL – The Partnership for Education and Research about Responsible Living	Norway
UNESCO Chair Ecologically safe development of the large region – The Volga Basin of the Nizhny Novgorod State University	Russian Federation
Drustvo Humanitas	Slovenia
Peermariteburg	South Africa
Universidad Nacional de Educacion a Distancia. Catedra UNESCO De Educacion Ambiental y Desarrollo Sostenible	Spain
Global Action Plan International	Sweden
OMEP	International based in Sweden
SWEDESD – Swedish International Centre of Education for Sustainable Development	Sweden
Misali Island Conservation Association (MICA)	United Republic of Tanzania
Gaia Education	United Kingdom
Open to Create	United Kingdom
SEEd (Sustainability and Environmental Education)	United Kingdom
The Sustainable MBA	United Kingdom
US Partnership for Education for Sustainable Development	United States
Faculty of Agriculture – University of Zimbabwe	Zimbabwe
Ministry of Agriculture Mechanization and Irrigation Development	Zimbabwe
Mukuvisi Woodland	Zimbabwe



Respondents to Survey for UN Internal Review of ESD*

UNESCO Office in San José

UNESCO Office in Havana

UNESCO Office in Beirut

UNU-IAS Japan (3)

UNESCO Office in Windhoek

UNESCO Office in Harare

UNESCO Office in Apia

UNESCO Office in Santiago de Chile

UNESCO Office in Almaty

UNESCO SC/HYC/UWS

UNESCO Office in Venice

UNESCO Office in Yaounde

UNESCO International Bureau of Education (IBE)

UNESCO Office in Addis Ababa

UNESCO Office in Kingston

UNICEF

UNESCO Office in Beijing

UNESCO Office in Doha (2)

UNEP

* IAC members participating in an M&E focus-group discussion included UNICEF, FAO, UNEP, UNECE, UNU, UNESCO, UNCCD, UNCBD and UN Habitat.

** Additional IAC members completing an ESD survey included UNECE, UNCCD, and UN Habitat.

National Journeys: towards Education for Sustainable Development

Review on National Experiences from:

- Chile
- Indonesia
- Kenya
- The Netherlands
- Oman
- Costa Rica
- Morocco
- Sweden
- South Africa
- Viet Nam

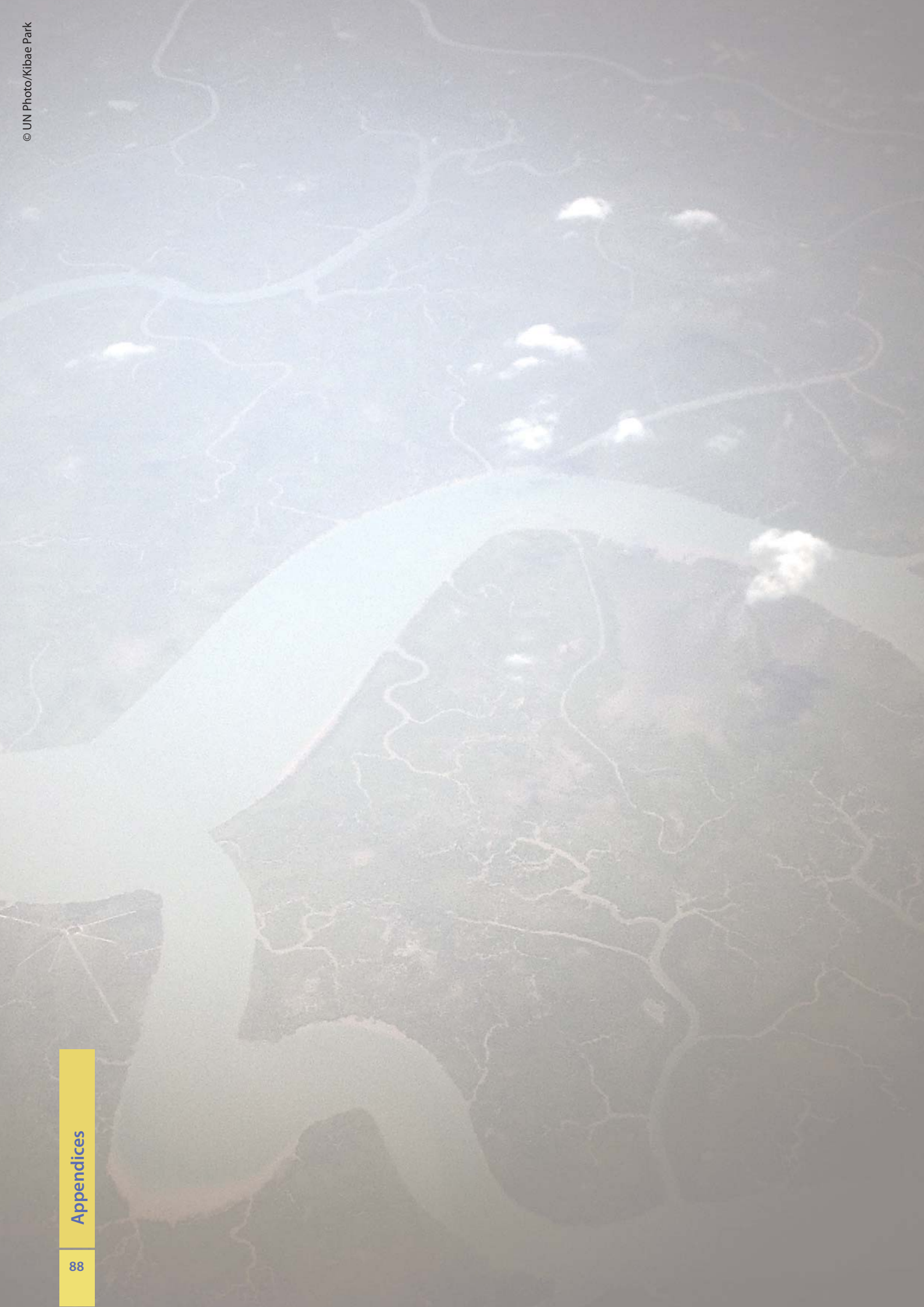


APPENDIX 3: MONITORING & EVALUATION EXPERT GROUP (MEEG)



Members

Name	Title / Institution / Country
BRENES, Abelardo	Special Advisor, Earth Charter International Costa Rica
GOVINDA, Ran- gachar	Senior Fellow and Head, School and Non-Formal Education Unit National University of Educational Planning and Administration India
MICHALOS, Alex	Director of the Institute for Social Research and Evaluation Professor Emeritus of Political Science University of Northern British Columbia, Canada
NAGATA, Yoshiyuki	Associate Professor, University of the Sacred Heart, Tokyo, Japan
RAAIJ van Roel	National Coordinator Senior officer - strategy and information Secretary of the National Steering Committee on Learning for Sustain- able Development Ministry of Agriculture, Nature and Food Equality, Netherlands
SHUMBA, Overson	Dean, School of Mathematics and Natural Sciences The Copperbelt University, Zambia
THAMAN, Konai	Professor Faculty of Arts and Law School of Education University of the South Pacific, Fiji
TILBURY, Daniella (Chair)	Professor of Sustainability Director of Academic and Corporate Affairs (Sustainability) University of Gloucestershire, United Kingdom
VARCHER, Pierre	Member of the Swiss National Commission for UNESCO (2004-2007) Switzerland
VASCONCELOS, Alcyone	Programme Specialist in Education UNESCO Institute for Statistics (UIS)





Shaping the Education of Tomorrow

2012 Report on the UN Decade of Education for Sustainable Development, Abridged

The challenge of sustainable development is as significant as ever. Education for Sustainable Development (ESD) can be used as a holistic tool to accompany technological advances, legislation and policy to bring about change in mindsets, values and lifestyles.

In the framework of the Monitoring and Evaluation of the United Nations Decade of Education for Sustainable Development (DESD, 2005-2014), this report, *Shaping the Education of Tomorrow*, includes input from hundreds of policymakers, scholars and practitioners engaged in ESD around the world. The evidence base captures the richness and diversity of ESD in practice, and the analysis focuses on learning and learning-based change towards sustainability.

What kinds of learning processes are emerging in the last stretch of the DESD? What is the role of ESD in supporting them? What changes have occurred since the early years?

As the DESD goes into its final phase, it will be crucial for UNESCO, its Member States and other stakeholders to ensure that promotion, support and evolution of ESD continues beyond 2014. Education is our great hope for a sustainable future.



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