



United Nations
Educational, Scientific and
Cultural Organization



**United Nations Decade of Education for Sustainable Development
(2005-2014)**



Shaping the Education of Tomorrow:

**2012 Full-length Report on the UN Decade of Education for
Sustainable Development**

DESD Monitoring & Evaluation - 2012

UNESCO Education Sector

Shaping the Education of Tomorrow

**2012 Full-length Report on the UN Decade of Education for
Sustainable Development**

U N E S C O

DESD Monitoring & Evaluation

2012

Published by the United Nations Educational,
Scientific and Cultural Organization
7, place de Fontenoy, 75732 Paris 07 SP, France

© UNESCO 2012
All rights reserved
ED/PSD/ESD/2012/PI/5

Prof. Arjen E. J. Wals of Wageningen University in the Netherlands is the author of this publication commissioned by UNESCO.

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The author is responsible for the choice and the presentation of the facts contained in this book and for the opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization.

©UN Photo/Eric Kanenstein
©UN Photo/Milton Grant
©UN Photo/Kibae Park
©UN Photo/Kibae Park

Edited by Romy de Courtay
Cover design: UNESCO

Contents

Executive Summary	5
1. The UN Decade of Education for Sustainable Development	8
1.1 Introduction	8
1.2 Objectives of the UN Decade of Education for Sustainable Development	10
1.3 A Decade in progress, a concept in motion	10
1.4 Aims of the second DESD global monitoring report	12
1.5 Data used to support the second global monitoring report	13
1.6 Limitations of the Global Monitoring and Evaluation Process	15
1.7 Outline of the report	16
2. ESD in a changing world	17
2.1 Positioning ESD in relation to other adjectival educations	17
2.2 The 'E' in ESD	22
3. The rise of new forms of teaching and learning	27
4. Learning in distinctive ESD contexts	34
4.1 Introduction	34
4.2 Early childhood care and education	34
4.3 Primary and secondary education	37
4.4 Higher education	47
4.5 TVET and learning in the private sector	54
4.6 Non-formal learning	58
5. Multi-stakeholder interaction and systemic change	65
6. Whole-system engagement	70
6.1 The position of ESD in relation to other educations revisited	70
6.2 Whole-system engagement and transition	71
7. The UN contribution to ESD	78
7.1 Self-reported achievement	78
7.2 Intersectoral cooperation for the DESD	79
7.3 Future challenges	80
8. Key conclusions and ways forward	84
8.1 General findings	84
8.2 Context-specific findings	85
8.3 Ways forward	87
References	89
Appendix 1 – Data sources	92
Appendix 2 – Acronyms	98
Appendix 3 – List of Monitoring and Evaluation Expert Group (MEEG) members	100

Acknowledgements from the author

Generating a report focusing on such a timely topic as education and learning in the context of sustainable development (SD) and involving a range of stakeholders (policy-makers, practitioners, administrators, researchers, etc.) at different levels (local, regional and global) across all UN regions (Asia-Pacific, Africa, Europe, Arab Region, Latin and North America) is no easy task. First of all, it is methodologically complex: how does one generate high-quality data allowing for valid and reliable conclusions transcending the contexts in which they were created? Secondly, it is highly sensitive: people from varying backgrounds will be looking for different things that may help advance their own interests, possibly at the expense of others' interests. Also, the sources used in this report are culturally 'nested', hence the meaning attached to a phenomenon or finding in one cultural setting might be quite different in another. Put differently, the lenses used to interpret the many sources of data are culturally embedded and may not match the cultural contexts in which the sources operated.

Clearly, creating a 'global report' such as this is not without risk: some readers may feel misrepresented, misinterpreted or even left out. Taking into account these sensitivities, risks and limitations, UNESCO's ESD section is to be credited for encouraging a monitoring and evaluation (M&E) process that emphasizes critical reflection and reciprocal learning, not with the purpose of ranking or labelling regions, countries or practices, but rather to stimulate future learning and innovation. Aline Bory-Adams and Mark Richmond, both recently retired, were instrumental in ensuring a strong built-in M&E component in the DESD. The new head of the ESD section, Alexander Leicht, continues to support a 'critically reflective' approach to M&E. In addition to recognizing the DESD leadership, I also wish to acknowledge the support of current and former UNESCO ESD section members Shivali Lawale, Bernard Combes, Juan Pablo Ramirez-Miranda and last but not least, Rosalyn McKeown, all of whom have been instrumental in organizing M&E meetings and gathering and organizing data.

Not only has UNESCO's ESD section encouraged this approach to M&E, it also has provided resources for supporting a Monitoring and Evaluation Expert Group (MEEG) comprising experts from around the globe who facilitated the creation of the Global Monitoring and Evaluation Framework (GMEF) which guided this report. Chaired tirelessly by Daniella Tilbury, the MEEG provided the foundation and structure, as well as the necessary credibility, for the DESD M&E process. Clearly, without the support of UNESCO's ESD section and the MEEG, this report could not have been created.

I would also like to acknowledge crucial others: UNESCO's regional bureaux and National Commissions, of course, but also ESD national focal points around the world and hundreds of key informants representing networks, governments, school boards, university networks, NGOs, private sector initiatives, who were responsible for gathering and sometimes co-analysing the surveys, stories, country case studies and learning-based practices that have found their way into this report. The stories and cases generated are many and rich. In many cases, the informants have gone the extra mile by supporting their responses with rich anecdotes that speak much louder than a 'check-in-a-box'.

Arjen E. J. Wals
Wageningen, the Netherlands, April 2012

Executive Summary

Education for Sustainable Development (ESD) can be considered a key outcome of the Rio Earth Summit held in 1992. ESD gained momentum across the globe when the UN identified the period between 2005 and 2014 as the UN Decade of ESD (also known as the DESD, or Decade). A review written halfway through the DESD showed that the need for ESD was well established in national policy frameworks and that national ESD coordinating bodies had been created in close to 100 countries across all UN regions. With UNESCO acting as lead agency for the DESD, networks and structures both within and outside the UN system had been established to encourage and support developing ESD in a range of contexts including schools, universities, communities and the private sector. ESD had gained recognition internationally as an education relevant to addressing today's SD challenges.

This report represents the second review of the DESD and is conducted in the context of its Global Monitoring and Evaluation Framework (GMEF). It appears twenty years after the Rio Earth Summit, at a time where the challenge of SD is greater than ever. It is all the more timely because there is increased recognition that this challenge cannot be solved solely through technological advances, legislative measures and new policy frameworks. While such responses are necessary, they need to be accompanied by changes in mindsets, values and lifestyles and a strengthening of people's capacities to bring about change. The report shows that many governments, NGOs, UN agencies and indeed, companies are increasingly emphasizing the importance of learning and capacity-building as they search for solutions to sustainability challenges including climate change, disaster risk management, biodiversity loss and sustainable production and consumption.

Learning and learning-based change towards sustainability comprise the key focus of this report. What kinds of learning processes are unfolding as the DESD enters its final stretch? What is the role of ESD in supporting these learning processes? What changes have occurred in this respect since the early years of ESD? These are some of the key questions we address, based on the input of hundreds of policy-makers, scholars and practitioners engaged in ESD in the Americas, Africa, Europe, Asia, and Oceania. The report's evidence base has been generated through key informant surveys, regional synthesis reports, learning-based case studies and national ESD journeys, as well as through extensive use of exemplary anecdotes, case study excerpts and reflections that capture the essence, richness and challenges of ESD in practice. The trends and patterns identified have not been presented in ways that characterize a specific country or region, as they can be found across the globe, although they manifest themselves more strongly in some areas than in others.

Many of the respondents posit that the nature of sustainability challenges is such that dealing with them requires more integrative, problem-based and exploratory forms of learning that also invite participants to be critical, creative and change-oriented. At the same time, they argue for synchronizing learning with the way the institutions supporting this learning operate – in other words, schools and universities engaged in ESD should also themselves seek to be managed sustainably. Seen in this light, the rise of 'whole-institution approaches' to ESD is promising as it reflects the need for both cross-boundary learning and synchronizing thinking and acting. Whole-institution approaches – which require the active engagement of multiple actors in the joint redesign of basic operations, processes and relationships – are increasingly put forward as a mechanism for making meaningful progress towards sustainability. The report identifies visionary leadership, social networking, new forms of research and high levels of participation as key elements of such approaches.

The boundaries between schools, universities, communities and the private sector are blurring as a result of a number of trends, including the call for lifelong learning; globalization; information and communication technology (ICT)-mediated (social) networking education; the call for relevance in higher education and education in general; and the private sector's growing interest in human resource development. The resulting 'boundary crossing' is reconfiguring formal, informal and non-

formal learning and changing stakeholder roles and public-private relationships. This new dynamic provides a source of energy and creativity in education, teaching and learning, which itself provides a powerful entry point for ESD. The report features many examples of multi-stakeholder social learning in the context of ESD where different societal groups find and complement each other in working towards local responses to ESD and SD.

A noticeable difference between the early and later years of the DESD is the private sector's interest in sustainability and capacity-building for corporate sustainability and the green economy – a movement in which ESD appears well positioned to play a key role. Whereas early on in the Decade ESD interest groups were looking for ways to connect with the private sector and VET, the reverse seems true today: the private sector and vocational schools are actively looking for new models of learning and capacity-building that can lead to greener companies and workforces. Some respondents caution that 'P' for 'profit' might dominate the other two Ps of the triple bottom line: 'P' for 'planet' and 'P' for 'people'. The new learning arising out of the business world's newfound interest in greening and corporate social responsibility is competence-based, whereby students are placed in a global context to address authentic corporate or industry sustainability challenges. Competence-based learning around real-life issues, coupled with competence-based assessment, can also be of interest to ESD in other contexts.

Increasing attention to sustainability-related topics that affect a community, country or region is being paid at all levels of formal education. In some parts of the world, this coincides with a call for educational innovation and strengthening of school-community linkages. Yet conditions and educational systems differ around the world: some allow for more space to deviate from standardized national curricula than others. Where there is space for some self-determination and autonomy for schools, teachers and students, the likelihood of education innovation and cross-boundary learning within society is greater. Where this space is more limited, developing quality educational material that can be linked easily to existing curricula will remain necessary.

At the level of higher education, this review shows that colleges and universities around the world are beginning to make more systemic changes towards sustainability amidst educational reforms towards efficiency, accountability, privatisation, management and control that often hamper their possibilities to do so. Alternative benchmarking and ranking systems now being established for universities include indicators of a university's contributions to sustainability.

Within the UN system, ESD is far more integral to the discourse and project implementation than it was two years ago. ESD is now becoming a central concept, rather than a peripheral one operating in the margins. Representatives of the various UN agencies working with ESD refer to a paradigm shift towards more intersectoral, cross-boundary and participatory forms of engagement. They see 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. ESD represents one of many recognized interests within the UN. Creating synergies with other educations, but also remaining critical of patterns and routines within and outside the UN system supporting interests that are in conflict with the very principles a deep ESD seeks to strengthen will be crucial to ensure its sustainability and legitimacy.

As the DESD approaches 2014 – its final year – supporting and further developing ESD as a catalyst for reorienting education, teaching, learning and professional development towards more holistic, integrative and critical ways of addressing sustainability challenges is paramount. This will require strengthening capacity-building for the forms of learning identified in this review, such as problem-based learning, multi-stakeholder social learning, interdisciplinary learning, action learning and critical thinking-based learning. It will also require a better understanding of what these capacities entail and what kinds of qualities and competencies should be developed to enable people and organizations to contribute to SD. A whole-system approach that affects all actors in a school system or a production chain seems the most likely to ensure such capacity-building and competence development.

To remain relevant in the years after the Decade, ESD will also need to position and develop itself as an education that can help citizens deal with complexity, controversy and uncertainty. It will also need to empower and equip them with the capacities to transform themselves and others, bearing in mind the well-being of the Planet. In this role, ESD is not competing with well-established educations like EE, or emerging ones like CCE. Rather, it supplies the methods, tools and learning processes that can strengthen all of them, while also benefiting from the lessons learned in the other education fields.

Expertise in both ESD and SD needs to be globally and openly accessible to all members of society (for instance through open-source internet-based platforms allowing scientists, community groups and individual citizens worldwide to contribute to and benefit from this new kind of research), with established mechanisms enabling all members of society to contribute to advancing this expertise. Continued research and M&E should take place in the coming years to support the evidence base proving that ESD can be effective in strengthening people's capacities to contribute to SD. As the evidence base expands, policies supporting learning-based transitions towards sustainability will very likely become stronger and more widespread. This could accelerate curriculum innovation and enable greater adoption of the learning and processes highlighted in this report.

Chapter 1: The United Nations 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, as climate change is showing. (Opening statement of the Bonn Declaration generated by the participants of the UNESCO World Conference on Education for Sustainable Development, held in Bonn, Germany, 31 March –2 April 2009.)

1.1 Introduction

At its 57th session in December 2002, the United Nations General Assembly adopted Resolution 57/254 declaring the time period between 2005 and 2014 as the United Nations Decade of Education for Sustainable Development (DESD) in order to emphasize the critical role of education in moving towards a more sustainable world.

The DESD offers an opportunity to promote the vision of a more sustainable and just global community through different forms of education, public awareness and training activities. Moreover, the framework for the Decade gives visibility to the critical role of education and life skills programmes in enabling communities to devise sustainable local solutions to problems linked to poverty and vulnerability.

The roots of ESD and the DESD can be traced to the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in 1992 in Rio de Janeiro. UNCED resulted in a landmark publication, Agenda 21¹, a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations system, governments, and major organizations (NGOs, CSOs and networks) to reduce the human impact on the environment. Agenda 21, the [Rio Declaration on Environment and Development](#), and the [Statement of Principles for the Sustainable Management of Forests](#) were all adopted at the Earth Summit by more than 178 Governments. The [Commission on Sustainable Development](#) (CSD) was created in December 1992 to ensure effective follow-up of UNCED and to monitor and report on implementation of the agreements at the local, national, regional and international levels.

Chapter 36 of Agenda 21 on education, training and public awareness, for which UNESCO was designated as task manager, identifies four overarching goals²:

- *Promote and improve the quality of education:* The aim is to refocus lifelong education on the acquisition of knowledge, skills and values needed by citizens to improve their quality of life;
- *Reorient the curricula:* 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;

¹ Agenda 21 was published by the United Nations in 1992. For further information, please visit:

<http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm>

² Source: UNESCO, 2005, *Promotion of a global partnership for the UN Decade of Education for Sustainable Development (2005–2014)*. Paris, UNESCO. Accessible via: <http://unesdoc.unesco.org/images/0014/001473/147361e.pdf>

- *Raise public awareness and understanding of the concept of SD:* 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.

The 34th UNESCO General Conference in 2007 adopted a resolution on ESD that ‘recognized that further substantial initiatives have to be taken by Member States and by UNESCO in order to reorient teaching and learning towards SD worldwide³. To this end, UNESCO and countries around the world were initially challenged to further conceptualize, focus and implement ESD and strategically prioritize their actions. During the second half of the DESD, the focus has shifted towards realizing visible results. This is where we are today, twenty years after the 1992 Rio Earth Summit.

These goals, as well as UNESCO’s role in supporting their achievement, were reiterated at the mid-DESD conference held in Bonn, Germany (UNESCO, 2009b) and attended by 900 participants from almost 150 countries, including nearly 50 ministers and vice-ministers. The Bonn Declaration also gave the world an action plan for ESD and provided concrete steps for implementing the remainder of the Decade.⁴

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

- *Human Development Report 2011: Sustainability and Equity: A Better Future for All*, published by UNDP, which mentions the role of ESD in promoting sustainable consumption⁵;
- The report of the United Nations Secretary-General’s High-Level Panel on Global Sustainability, published in 2012, which also refers to the importance of ESD⁶;

The current report is a part of the GMEF designed to monitor and evaluate the DESD’s progress. Phase I of the review, completed at the mid-DESD point, focused on structures, provisions and policies put in place during the first half of the DESD to support the development of ESD around the globe (UNESCO, 2007a). This report and the companion literature review (Tilbury, 2011) represent the outcome Phase II of the GMEF. They focus on the learning processes taking place in the various contexts of education, teaching and learning both in the public and private sectors and in the intersections between them as a result of people engaging in ESD.

Finally, the report appears twenty years after the Rio Earth Summit, at a time when the challenge of SD is as great as ever (Worldwatch, 2011; 2012). The report is timely in that there is increased recognition that this challenge cannot be solved only through technological advances, legislative measures and new policy frameworks (UNEP, 2011). While such responses are necessary, they will need to be accompanied by changes in mindsets, values and lifestyles, as well as a strengthening of people’s capacities to bring about change. This recognition explains the key role many governments, NGOs, UN Agencies and indeed, companies are allocating to learning and capacity-building as they search for solutions to interrelated sustainability challenges such as climate change, disaster risk management, biodiversity loss, sustainable production and consumption.

³ All relevant documents generated at this 34th General Conference can be found at: http://portal.unesco.org/en/ev.php-URL_ID=39369&URL_DO=DO_TOPIC&URL_SECTION=201.html

⁴ The Bonn Declaration can be found at: http://www.esd-world-conference-2009.org/fileadmin/download/ESD2009_BonnDeclaration080409.pdf

⁵ This report can be accessed at: http://hdr.undp.org/en/media/HDR_2011_EN_Contents.pdf

⁶ The report *Resilient People, Resilient Planet: a Future Worth Choosing* can be retrieved at: http://www.un.org/gsp/sites/default/files/attachments/GSP_Report_web_final.pdf

1.2 Objectives of the UN Decade of Education for Sustainable Development

The scope of the DESD is broad and its potential effects far-reaching. The primary goal of the DESD, spelt out in the United Nations General Assembly Resolution 59/237, 'encourages Governments to consider the inclusion ... of measures to implement the Decade in their respective education systems and strategies and, where appropriate, national development plans'.⁷ To this end, the DESD aims to integrate values, activities and principles inherently linked to SD in all forms of education and learning and to help realize a change in attitudes, behaviours and values to ensure a more sustainable future in social, environmental and economic terms. The DESD offers national governments the opportunity to reorient various dimensions of education, training and governance to enable all stakeholders to view the world through a lens of concern for sustainability.

The DESD is working to achieve these results by:

- facilitating networking, linkages, exchange and interaction among stakeholders in ESD, both within the UN system and within and among Member States regionally, nationally and transnationally;
- fostering higher-quality teaching, learning, research and capacity-building in ESD;
- supporting countries in realizing the MDGs through ESD efforts;
- offering ESD as a canvassing and unifying concept for emerging educations, including more recent ones focusing on climate change and disaster risk reduction; and
- providing countries with opportunities to incorporate ESD into education reform efforts to contribute simultaneously to SD and educational quality.

1.3. A Decade in progress, a concept in motion

In a dynamic world challenged by a number of on-going and new sustainability challenges, ESD itself is in motion. Now that the Decade has entered its second half, a range of different interpretations and manifestations of ESD have emerged, yet some core components seem to resurface across contexts and regions. Overall, ESD seeks to enable citizens around the globe to deal with the complexities, controversies and inequities arising from issues relevant to the environment, natural heritage, culture, society and economy. At least four lenses of ESD can be distinguished:

An integrative lens: taking on a holistic perspective that allows for integrating multiple aspects of sustainability (e.g. ecological, environmental, economic and sociocultural; local, regional and global; past, present and future; human and non-human);

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

A transformative lens: moving beyond awareness to incorporate real change and transformation through empowerment and capacity-building that may lead to or allow for more sustainable lifestyles, values, communities and businesses.

A contextual lens: recognizing that there is no one way of living, valuing and doing business that is most sustainable everywhere and always and that although we can learn from each other, places and people are different and times will change. Therefore, sustainability needs to be recalibrated as realities and times change.

⁷ This resolution can be found at: <http://www.un.org/depts/dhl/resguide/r59.htm>

Box 1 lists some essential characteristics of ESD as distinguished in the DESD and originally identified in the International Implementation Scheme (IIS) for the DESD (UNESCO, 2005)⁸.

Education for Sustainable Development:

- is based on the principles and values that underlie sustainable development;
- deals with the well-being of all three realms of sustainability – environment, society and economy;
- promotes lifelong learning;
- is locally relevant and culturally appropriate;
- is based on local needs, perceptions and conditions, but acknowledges that fulfilling local needs often has international effects and consequences;
- engages formal, non-formal and informal education;
- accommodates the evolving nature of the concept of sustainability;
- addresses content, taking into account context, global issues and local priorities;
- builds civil capacity for community-based decision-making, social tolerance, environmental stewardship, adaptable workforce and quality of life;
- is interdisciplinary: no one discipline can claim ESD as its own, but all disciplines can contribute to ESD;
- uses a variety of pedagogical techniques that promote participatory learning and higher-order thinking skills.

Box 1. Essential characteristics of education for sustainable development (UNESCO, 2005).

Whereas the essential characteristics of ESD identified in the IIS viewed ESD broadly to help frame its concept and policies, this report and companion literature review looks specifically at the meanings and manifestations of learning in the context of ESD. In the literature review (Tilbury, 2011) '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.

The literature review points out that this interpretation of learning goes beyond gaining knowledge, values and theories related to SD. Those learning in the context of ESD include multiple groups in society, from people in formal education settings to facilitators of multi-stakeholder change processes, from network coordinators and policy-makers to administrators, funders and members of the private sector.

Clearly, as the DESD progresses the concept of ESD does not remain static but rather continues to adapt and change to accommodate the shifting demands of our time. This report highlights these changes and adaptations, illustrated and supported by a wide range of projects, cases, networks,

⁸ The key characteristics, as well as a definition and history of ESD, can be found at:
http://portal.unesco.org/geography/en/ev.php-URL_ID=14132&URL_DO=DO_TOPIC&URL_SECTION=201.html

country ESD journeys and initiatives around the globe. These reflect the processes and learning for SD in a variety of contexts and regions.

1.4 Aims of the second DESD global monitoring report

The monitoring and evaluation of the DESD occurs within the GMEF designed by the DESD MEEG⁹. After its first meeting in 2007, the MEEG recommended that UNESCO publish three DESD implementation reports during the life of the Decade:

1. in 2009: focusing on the context and structures of work on ESD in Member States;
2. in 2011: focusing on processes and learning initiatives related to ESD; and
3. in 2015: focusing on impacts and outcomes of the DESD.

This report, focusing on processes and learning in ESD, is a key component of Phase II of the GMEF (Tilbury, 2009). ‘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. Hence, the report focuses on the type of learning taking place in the various sectors of society to engage stakeholders meaningfully in ESD.

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

- a. to determine what constitutes processes and learning for ESD;
- b. to identify who is involved in the processes and learning for ESD;
- c. to identify types, levels and settings of education – formal, non-formal and informal – wherein processes and learning for ESD are taking place;
- d. to emphasize the processes that synergize formal, non-formal and informal learning (e.g. through social learning approaches);
- e. to determine what ESD processes aim to achieve, i.e. whether they have normative aims (for example, including ESD in curricula) or learning aims (for example, increasing and enhancing stakeholders’ awareness of ESD and capacity-building);
- f. to examine what has started to change, what has been learned in the process of implementing ESD and to what extent it corresponds to the principles of SD;
- g. to identify what learning processes should be promoted to facilitate learning in ESD;
- h. to identify learning opportunities (projects, programmes or activities) in ESD which in turn promote and facilitate SD;

Certain key processes underpin ESD frameworks and practices (Tilbury, 2011):

- 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; and
- processes of active and participatory learning.

⁹ For a concise description of the GMEF, see: Tilbury, D. (2009). Tracking our progress: A Global Monitoring and Evaluation Framework for the UN DESD. *Journal of Education for Sustainable Development – July/December 2009*, Vol. 3, No. 2, pp. 189–193.

The purpose of this report on processes and learning taking place to strengthen ESD is not to rank, label or judge countries or regions. Rather, it is to highlight trends in education and learning around the globe that show or limit ESD's potential at all levels of education and other less formal learning contexts (e.g. in communities and businesses). The report seeks to strike a balance between the 'universal' (attempts to generate general guidelines that can be used in contexts other than those in which they were generated) and the 'contextual' (attempts to do justice to local realities, histories and political contexts). The latter also recognizes that the various countries and subregions around the world have their own unique challenges, perspectives and histories, all of which affect the way ESD is perceived and implemented. To complicate things further, there are also big differences within countries themselves. The report also looks at changes in ESD engagement that have occurred, and related trends within the UN system itself.

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, Ministry of Education, Brazil).

Monitoring and evaluating a UN Decade in progress is highly complex if one considers the geographical scope (the globe) and the timeframe (10 years). It is also highly ambitious, as the DESD seeks to affect multiple levels of governance and to engage multiple (including marginalized) stakeholders. There is no doubt that people are engaged worldwide in ESD in a variety of ways. As demonstrated in both the two-year progress report (UNESCO, 2007a) and the first global monitoring report (UNESCO, 2009a) which constituted a mid-DESD review of contexts and structures for facilitating ESD, DESD implementation has made considerable progress since its international launch in March 2005. As stated in the mid-DESD review (UNESCO, 2009a; Wals, 2009), proving that this engagement is *because of* or *in spite of* the DESD is quite complicated and perhaps impossible. The point of this report is not to provide such evidence, but rather to sketch the educational landscapes and learning contexts unfolding around the world as schools, communities, the business community, NGOs and CSOs everywhere try to find ways to engage people meaningfully on sustainability issues in both their personal and professional lives. In other words, the point of ESD is not the DESD. Rather, the point of the DESD is ESD.

This report appears at the brink of Rio+20 and therefore provides a good opportunity to see to what extent, twenty years after Chapter 36 of Agenda 21, ESD has been able to initiate and support processes and learning that may help create a more sustainable world.

1.5 Data used to support the second global monitoring report

As this report focuses on the actual learning that takes place in schools, universities, communities and workplaces, as well as on the processes used to engage multiple stakeholders in supporting ESD, a number of data sources were used to get a rich picture of what is happening on the ground (see Figure 1). These include:

Literature review: In 2010 UNESCO commissioned an expert review on processes and learning for ESD. The resulting report (Tilbury, 2011) identifies what commonly accepted learning processes are aligned with ESD and can be promoted through ESD-related programmes and activities. The report examined which learning opportunities contribute to SD, thereby providing an important entry point and backdrop for this review. Together, the literature review and this report represent the key outcome of Phase II of the GMEF.

Global Monitoring & Evaluation Survey (GMES): An online survey was created to get a better sense of the various types of learning employed and/or emerging under the umbrella of ESD in the various educational sectors (from early childhood education to vocational education and training and community-based and corporate learning). The respondents could also identify barriers to and opportunities for strengthening ESD in their country. The GMES also provided ample opportunity for more open-ended narrative responses. A key strategy behind the online survey was that it would be

completed by people knowledgeable about a specific education sector as opposed to one individual attempting to cover all sections. Unfortunately, this strategy worked only partly, as many countries returned only one survey covering a single type of education. Many countries, however, returned multiple surveys covering multiple education sectors. In total, 216 responses from 102 countries were received. The responses quoted are not to be interpreted as official country responses. The surveys were used by the UNESCO regional offices to write regional synthesis reports, which again provided input for this review. The offices commissioned consultants or staff members also engaged in follow-up and/or supplemental phone conversations, email correspondence and internet searches.

Learning-based case studies (CS) – All five UNESCO Regions provided learning-based case studies: Arab States (2 case studies), Africa (2), Asia Pacific (2), Europe and North America (2), and Latin America and the Caribbean (4). The case studies focus on learning and processes currently used in ESD programmes and the changes that have occurred in the last five years. A template was used to generate them to capture the breadth of ESD at the local, national and international levels.

Internal review of contributions to ESD by the various UN agencies (UNIR): UN Agencies involved in ESD and connected through the Inter Agency Committee (comprising UNECE, UNCCD, UNEP, UNICEF, UN Habitat, UNESCO and UNU) completed an ESD survey on their contribution to ESD and the manner in which they joined forces with other UN Agencies to strengthen ESD and/or use ESD to help realize their own educational and sustainability-oriented tasks. These responses were re-articulated and shared in a focus group discussion among some of the agencies (including UNICEF, FAO, UNEP, UNECE, UNU, UNESCO, UNCCD, UNCBD and UN Habitat).

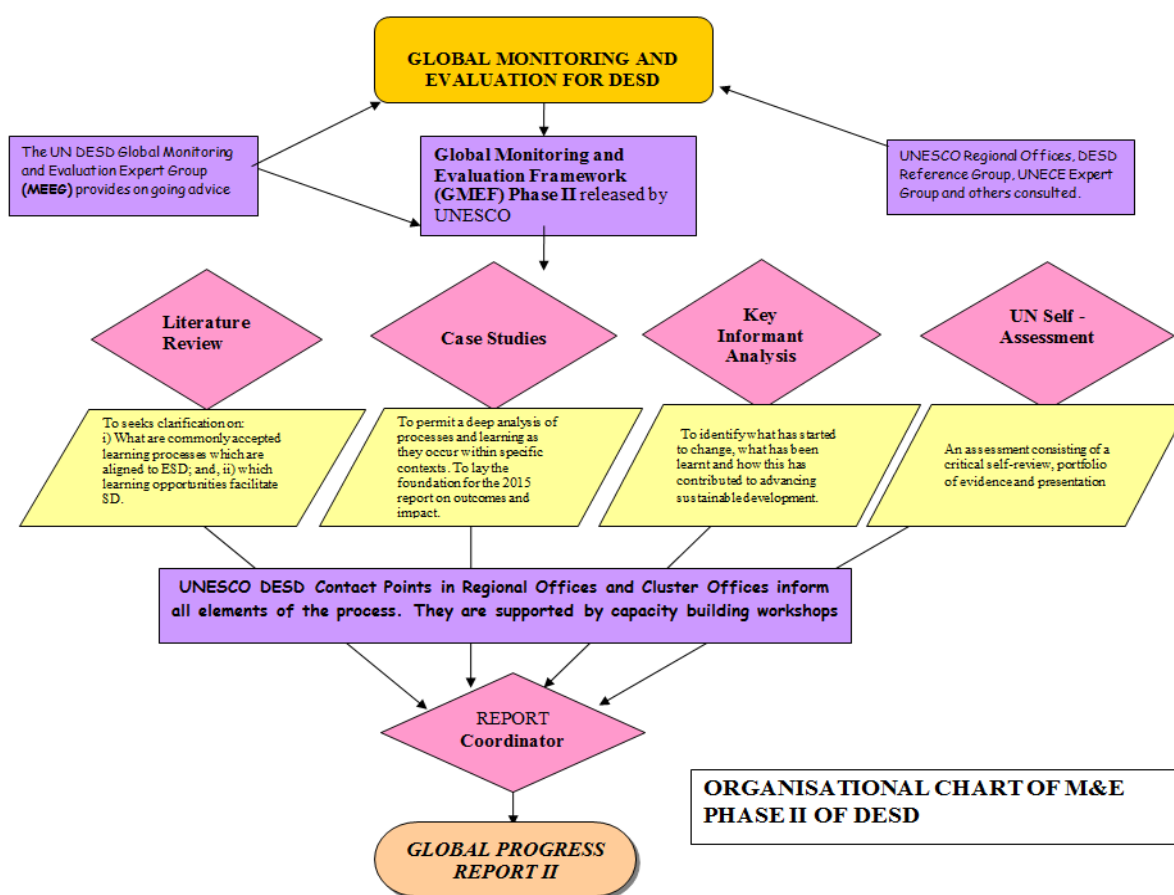


Figure 1: Organizational chart of M&E Phase II of DESD

National ESD Journeys (NESDJ): These eight detailed reviews of countries in different regions of the world were commissioned to provide an overview of ESD at the national level. The chapters follow a specific format which includes one section on learning and processes.

Key informant survey (KIS): Forty-four key ESD informants from around the world were selected by UNESCO to receive a questionnaire. They represented a range of local, regional, national and transnational organizations and individuals that are active in ESD and have a relationship with UNESCO. They included international and national NGOs, as well the DESD Reference Group, an advisory body to UNESCO. They received the KIS electronically, along with a letter requesting that the recipient 'query the members of their organization' to complete the questionnaire so that the response would be more broadly informed than from one individual's perspective. A number of organizations returned more than one response to the questionnaire.

Reports from UNESCO ESD Chairs: Two consultations took place among the UNESCO ESD Chairs. These consisted of an informal online questionnaire initiated by the global report coordinator and a more formal online questionnaire commissioned by UNESCO's ESD Section.

Appendix 1 features an overview of the data used and the countries and UN agencies that contributed.

1.6 Limitations of the Global Monitoring and Evaluation Process¹⁰

While the GMEF guides the DESD monitoring and evaluation process, it is important to acknowledge its limitations:

- a. The MEEG developed the GMEF to assess implementation of the Decade, but realized that this process would capture the changes occurring during the ten-year period marked by the DESD and not just initiatives developed under the label of the DESD. It is difficult to discern which processes and learning activities were developed specifically for the DESD and which gained or gathered momentum because of the DESD's existence. It is, however, important to recognize the ESD processes and learning that have taken place or continue to take place.
- b. Global studies present challenges related to distribution and collection of survey instruments. The involvement of local, regional and global NGOs in SD and ESD (considered key players in ESD) and youth are under-reported. Whereas, much of the data come from UN related sources, is from UNESCO Headquarters and Field Offices.
- c. Using a universal template and questionnaire has advantages not only in creating uniformity in reporting, but also in making sure that all respondents report on the same ESD components and issues. From the data provided, however, it is clear that not all concepts included in the template were understood in the same manner, even though a glossary of key terms was provided. Even within the same country, organizations or officials have different understandings of concepts such as 'problem-based learning' or 'multi-stakeholder engagement'.
- d. An interactive process sometimes took place involving multiple people who were knowledgeable about specific ESD areas, thereby strengthening the validity of those responses. However, there were also cases where the data entered in the surveys were not confirmed by multiple sources to determine whether others also deemed valid and supported the responses provided.
- e. Even though our intention was to have the designated country representatives *manage* the completion of the global survey by distributing it to key informants in all the specified ESD

¹⁰ Most of these limitations have been identified by the MEEG. The GMEF is available at: <http://portal.unesco.org/education/en/files/56743/12254714175GMEFoperationalfinal.pdf/GMEFoperationalfinal.pdf>

contexts, they often filled in the questionnaire themselves – thereby unwillingly privileging the ESD context they were most familiar with at the expense of the others. As a result, the global survey has limited value as many participating countries did not turn in a separate survey for each of the ESD contexts. The GMES did include a question asking respondents to assess their own level of expertise in the ESD context on which they reported. Most respondents rated their level of expertise ‘high’ or ‘very high’.

1.7 Outline of the report

This second DESD global monitoring report is different from the first in that it takes learning processes that are unfolding in the context of ESD as its overarching concept. It approaches learning from two perspectives: 1) as it engages people, young and old, in formal, informal and non-formal settings, on sustainability issues and 2) as it enables stakeholders at various levels to create better opportunities for ESD and start reorienting entire systems (e.g. schools, communities and companies) towards ESD. Based on an analysis of a large pool of data provided by people worldwide operating both within and outside UN organizations, the report tries to capture and describe these multiple forms of learning and stakeholder interaction, supporting them with anecdotes and cases exemplifying the type of learning or stakeholder interaction they represent. These multiple forms of learning transcend countries and regions – which also present great variations within their own borders. Unlike the first report, therefore, this one is structured around regions.

Chapter 2 presents the various manifestations and meanings of ESD and their connections with other educations revolving around the well-being of people and the planet. Chapter 3 focuses on forms of teaching and learning that are gaining traction in the second half of the DESD. Chapter 4 – the longest – reviews all ESD learning contexts distinguished in the GMES for Phase II: Early childhood care & education (ECCE), primary education, secondary education, technical and vocational education & training (TVET), higher education and non-formal education; learning in the private/commercial sector has been connected to the section on TVET. Chapter 5 highlights processes of multi-stakeholder actions to create systemic change. Chapter 6 focuses on the still marginal but growing ‘whole-system engagement’ approach to ESD. Chapter 7 highlights the UN contribution to the DESD, and particularly UNESCO’s role. Finally, Chapter 8 closes with the key findings and suggestions for the way forward to the end of the DESD and beyond.

Chapter 2: ESD in a changing world

Today, there are several epistemological schools of thought on environmental education in Brazil: critical environmental education, education for environmental management, education for sustainability and education for SD (among others). This trend means that a mature conceptual level has been attained, as well as the discovery of inner constraints. Choosing this or that terminology has not generated concrete solutions for the environmental problems faced by Brazil. This happens whenever practical, transforming and contextualized experiences take place in the daily lives of educators, students and communities (CS, Brazil).

2.1 Positioning ESD in relation to other adjectival educations

When attempting to capture the kinds of change, innovation processes and forms of learning that take place in the context of ESD, one should acknowledge that many occur in related educational contexts that may not be called ESD but show a strong family resemblance. Clearly, ESD does not operate in a vacuum separate from other global education initiatives – some new and emergent, some old, but all sharing a concern for the well-being of people and the planet.

For one, ESD relates to major UN-supported education initiatives such as Education for All (EFA)¹¹ and the UN Literacy Decade (UNLD)¹², but also to a whole range of other ‘adjectival’ educations that touch upon SD or SD components. In the mid-DESD review (UNESCO, 2009a), the list of adjectival educations included: environmental education (EE), peace education, human rights education, consumer education, development education, health education, HIV/AIDS education, biodiversity education, gender education, inclusive education, multicultural education, holistic education, global education and citizenship education. Since the mid-DESD review, yet new adjectival educations have emerged, including: disaster risk reduction (DRR) education, climate change (CC) education and education for food security – all of which can be linked to ESD but are likely to get more traction in areas where these issues form an immediate existential threat.

Countries most at risk of climate change may be more readily willing to include DRR and CC education 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 but a lot more work remains to be done (UNIR, UNICEF).

If the number of ‘hits’ or websites generated during a Google search is any indicator of a social phenomenon, and if continuous growth in these hits indicates its growing presence in society, then consider the following: on 29 March 2005 – the first year of the DESD – a Google search for ‘education for sustainable development’ yielded 89,000 websites. On 29 January 2009 – almost four years into the DESD – the same search yielded 215,000 websites. On 28 January 2012, this search yielded 1,550,000 hits – over 7 times the number of 2009 hits and over 17 times the number of 2005 hits on ESD. Of course, this rapid growth is also a result of the on-going digitalization of communication. Other educational fields related to ESD show a similar growth pattern, but none of those listed in Figure 2 grew as fast as ESD (except for CCE, but Google hits for CCE were not logged in 2005 and 2009). Figure 2 also demonstrates that the much older and more widely established field of EE has a similar growth pattern – but while in January 2009 it received more than 16 times more hits (3.5

¹¹ For Education for All (EFA) background information, refer to: www.unesco.org/education/efa/

¹² For information on the United Nations Literacy Decade (UNLD), refer to: www.unesco.org/education/litdecade/

million websites) than ESD, in January 2012 it yielded 7,9 million hits – ‘only’ 5 times more than ESD. It should be noted that in absolute terms, EE is still by far the highest-ranking adjectival education in terms of Google hits. This suggests that this traditional field still has very significant global presence.

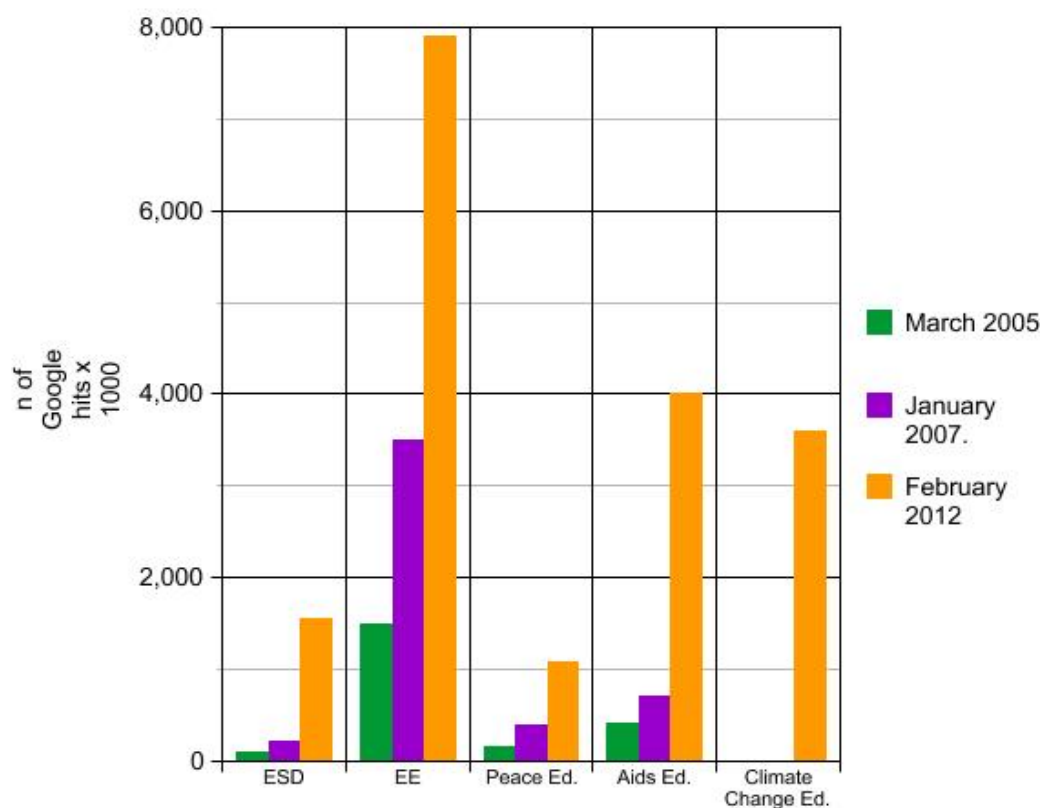


Figure 2: ESD growth according to Google compared with other ‘adjectival’ educations

Although the number of Google hits only provides a snapshot that is by no means an authoritative indicator of ESD growth (let alone of the quality of learning taking place under the umbrella of ESD), it does indicate that ESD is finding a place in the world of emerging educations that seek to address some of the key challenges of our time. It is noteworthy that CCE (Box 2) as an emergent education receives 3.6 million hits, which seems remarkable considering its short history relative to ESD and HIV/AIDS education and certainly relative to EE, which has been around since the late 1960s.

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.

Box 2. The emergence of CCE in the United States (GMES, NOAA/USGCRP, USA)

CCE seems to develop alongside ESD in countries most affected by climate change now or in the future.

A case study on 'How Climate Change Education is Influencing Pedagogy for Teacher Education?' highlights the way pedagogy for teacher education at the university level in the Caribbean has been significantly influenced by educating for sustainable development with a particular focus on climate change. Specifically, the case study details how 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. Education for Sustainable Development (ESD), which includes climate change education, is not yet a core course in the School of Education, University of the West Indies (UWI), Mona. The case study suggests that teaching Climate Change Education for Sustainable Development (CCESD) through infusion in a number of courses for in-service teachers at the School of Education, University of the West Indies (UWI), has influenced significantly the choice of pedagogy. Given the urgency of CCESD and the need for concrete application, understanding/knowledge as well as a change in attitude towards the environment (in its broadest sense), teacher educators have been encouraged, through UNESCO and the Joint Board of Education, UWI, to review and reorient how their in-service teachers learn and how they teach.

Box 3. Connecting CCE and ESD while reorienting pedagogical approaches (CS, Jamaica)

CCE is being mainstreamed into school curricula. Its introduction includes, among other issues, the science of climate change, social and human aspects, policy responses and sustainable lifestyles. According to monitoring and evaluation data, 59% of responding countries report action on CCE; 35% of those countries have taken 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.

Since the mid-DESD global monitoring report, many governments have begun developing educational responses to cope with climate change and the increased occurrence and severity of natural disasters. These responses are often connected to ESD and EE.

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, UNESCO National Commission of the Philippines, Philippines).

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 modality. 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 (ESD Section email survey).

The first DESD global monitoring report (UNESCO, 2009a) showed that ESD is not interpreted similarly – and manifests itself differently – around the world. An example from the Pacific Islands shows that ESD principles are deeply rooted in traditional cultures: in Tonga, the main purpose of *ako* (learning) is to gain knowledge and understanding considered important for cultural survival and continuity or *nofo fakapotopoto*, which refers to ‘intelligent living’ (Thaman and Thaman, 2009, p. 65). Another, more political, perspective on ESD comes from Latin America, where current educational institutions are sometimes seen as barriers to moving towards SD. Gadotti (2008; 2009) points out that these institutions tend to reinforce the principles and values of an unsustainable lifestyle and economy and that without social mobilization against the current economic model, ESD will not reach its goals. He pleads for a radical reorientation of teaching and learning towards systems thinking and redesigning the places where we live and learn so that they breathe and mimic sustainability. An excerpt from the National ESD Journey of Costa Rica (UNESCO, forthcoming) illustrates the political aspect of ESD as it plays out in a number of nations. While it suggests that EE is less critical than ESD, this is not necessarily so: in both ESD and EE, there are critical and less-critical practical manifestations depending on local interpretations, histories and realities.

Costa Rica's overall model of development is not based on principles of authentic sustainability, but rather on seeing development as continuous growth in GDP and a greater interdependence of the national economy with the rest of the world. It is not surprising that ESD is forsaken for environmental education. In this, less critical approach, it is easier to attempt to deal with the symptoms rather than with the root causes.

... [T]he period from the 1980s until the present has also been characterized by a deep-seated belief in the good life achieved through consumerism. Although in the public identity, developing along environmental, socio-economic equity and democratic dimensions of sustainability are strong in the collective imagination, the key question is to what degree the country's positive traditions and aspirations can lead the way to authentic sustainable development or whether it is a form of false consciousness. Surely, this situation is not different from [the one] most nations in the world are facing: sustainable development is a conflicted set of values and principles (NESDJ, Costa Rica).

Clearly, formulating global guidelines for ESD that are more or less independent of the cultural and political context is hardly possible. While the inevitable tension between these guidelines and the local context should be addressed, it may not always be resolved. A workshop report from 2007 (UNESCO, 2007b), for instance, asks questions like: ‘How can we uphold cultural diversity in the age of globalization? How is it possible to strengthen minority cultures in this current wave of Western culture, which is spreading around the world?’

The first DESD global monitoring report also noted that in comparison with the DESD’s early years, there is no push for a uniform and agreed-upon view of ESD which can be prescribed to all countries and regions of the world. Instead, the emphasis is more on recognizing the need for locally relevant interpretations of ESD and related forms of educations. This shift is expressed in the mid-decade Bonn Declaration (UNESCO, 2009b):

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

In the regional synthesis reports and some of the national journeys (UNESCO, 2011 and forthcoming), references can be found to what might be called an SD divide. First, there is the 20 per cent of humanity (including wealthy people in privileged areas of poor countries) whose ecological footprints cannot be sustained and who must find ways to reduce their footprints and develop lifestyles requiring

a more moderate use of natural resources. Canadian ESD scholar and critic David Selby even suggests that in some parts of the world, it might be more appropriate to speak of 'sustainable contraction' rather than 'sustainable development', and indeed of 'education for sustainable contraction' (Selby, 2010). Many responses refer to the importance of consumer education and the need to encourage values other than material ones.

Learning for sustainable development enables everyone to get back into a 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, France).

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, PERL).

But there are also numerous people in both rich and poor parts of the world who face quite a different challenge: finding ways to fulfil their needs (including very basic ones such as clean drinking water, sanitation, food security and adequate health care) sustainably and without falling into the trap of overdevelopment and consumerism-dependent lifestyles.

The push within societies to emulate the industrialized societies' overconsumption ... will ultimately mean worsening unsustainable livelihood for the vast majority of Pacific Island peoples (UNESCO Chair, Tonga).

.... modernized technologies as well as market-based consumer oriented production models have replaced traditional, sustainable practices for resource use and depletion throughout the process (NESDJ, Viet Nam).

While learning about voluntary simplicity – reducing ecological footprints and doing more with less – might be appropriate and required in the materially wealthy parts of the world, it may be wholly inappropriate where people live in poverty, lack food security, or live in disaster-prone areas. Revitalizing and scaling up traditional ways of living (which in hindsight appear more sustainable than the dominating market-based consumer-oriented ways) might make more sense – but so does finding pathways out of poverty that will enable people to improve their quality of life. The forms of ESD associated with these challenges are quite different.

Participants at a workshop organized by the UNESCO Centre of Catalonia in Spain (UNESCOCAT), which included many faith-based and religious organizations, noted that 'not only should we in the overdeveloped world not preach sustainability to indigenous peoples: we should aim to learn from those who have been practising sustainable lifestyles over the centuries' (UNESCOCAT, 2007, p. 16). Again, this illustrates the need to find learning processes and change mechanisms that are appropriate for people's living conditions.

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 such 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).

2.2 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, Canada).

This review essentially focuses on the 'E' in ESD, while recognizing that the meaning of SD varies and is often contested and shifting as the world and the state of the planet change continuously and unpredictably. Both within the UN agencies supporting ESD and the various contexts of education and learning, there is growing recognition of a) the contested nature of SD, in that there is no universal agreement on how to become more sustainable, and b) the importance of the capacities, skills, competencies and qualities people need to contribute to transitioning towards a more sustainable world. The question, 'What are appropriate learning processes for developing such qualities in citizens, young and old?' has now become part of the conversation. For many respondents – whether from within the UN (e.g. a number of UN Agencies such as UNICEF, UNEP and UN–HABITAT), on the UN periphery (e.g. UNESCO Chairs), or outside the UN (e.g. NGOs, representatives of school networks, university networks) – 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, GAIA).

Underpinning it is the classic question about education itself: Is education above all about social reproduction or about enabling social transformation? The answer is not the same around the world and educators imagine how educated citizens interact within society in different ways (Jickling and Wals, 2008, pp. 8–11). The 'meaning of education' question, just like the 'meaning of SD' question asked earlier on in the DESD, influences the way in which ESD is interpreted and implemented.

In fact, the space allotted to concepts like participation, self-determination and autonomous thinking influences the kind of ESD that emerges or is possible. When this space is narrow, more prescriptive modes of ESD tend to prevail – for instance, focusing on instructing and training people in how to live their lives more sustainably. The transmission-oriented ESD mode relies mainly on instructional forms of teaching and knowledge transfer. It requires high levels of agreement and confidence amongst its supporters on what needs to be realized and what people should do to live sustainably.

When the space for participation and democratic involvement is wide, more interactive and transformative modes of ESD are likely to emerge that tend to emphasize capacity-building and empowerment over behaviour change (UNESCO, 2011). The transformation-oriented learning and capacity-building mode of ESD relies more on participation, self-determination, autonomous thinking and knowledge co-creation. This approach makes particular sense when there is less (or no) agreement on how people should live sustainably, but there is agreement on our moral obligation to always look for ways to do things better or do better things. It can be argued that both modes (or rather both extremes, since in practice both perspectives coexist and mix) are legitimate. But as the DESD progresses, so does the realization that ESD needs to move beyond the transmissive to a transformative mode.

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).

Many of the respondents allude to the importance of a critical examination of lifestyles, given economic premises and power relationships and inequities. They realize that 'business as usual' is not an option and that education and learning can play an important role in realizing a fundamental transition (Wals and Schwarzin, 2012). They also point to ESD's crucial role in reconnecting people with the earth and other living beings to break with unsustainable routines and patterns and co-create alternative ways of living. The idea that participation, co-creation and societal critique are necessary is arguably normative and political, as it suggests that a sustainable world cannot be created without the full and democratic involvement of all members of society. In any case, a new language and a different way of speaking about ESD have evolved compared with the DESD's beginnings.

The experiences so far gained from MESA and GUPES show that reorienting education to address sustainability through the mainstreaming of environment and sustainability concerns into higher education for sustainable development cannot be achieved through a prescriptive approach. Instead, it requires a participatory process of co-defining what can/ought to be mainstreamed and how this might best be done in different contexts (UNIR, UNEP).

This shift reflects the perceived need for continuous engagement in sustainability in formal, non-formal and informal settings on the one hand and capacity-building, participation and self-determination in SD on the other. These different outlooks have important consequences and are often predicated on social and cultural background, since different societies have different boundaries for participation, autonomous thinking and self-determination and a corresponding view of democracy.

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

Community ownership of education could be achieved by empowering populations from the grass-roots level, by reaching out to the marginalized, paying special attention to women and girls. More generally, education and lifelong 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 and 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).

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

As the DESD unfolds, the ESD principle that each individual should be given opportunities to participate in local and global discussions about our common future is growing more prominent. Learning is seen as a key component of innovation leading to social change. As previously stated, learners have different amounts of space to work towards their own self-determined and co-created solutions to sustainability issues and challenges. In some instances of school greening, students must execute a list of tasks established by others (e.g. checklists developed by a sustainability-oriented NGO). In others, the students themselves conceptualize what a green school means, what can be done, who should be involved, etc., eventually generating their own indicators and checklists.

These differences are often related to a country or region's interpretation of democracy, participation and inclusiveness, but also to people's everyday living conditions. These spaces are noticeably widening, not only as a result of internet-based social networking but also of changing political climates in some parts of the world. Participants at the UNESCO's Leaders Forum held at the 36th General Conference in November 2011 concluded that youth – the 'democratic pulse of today's world' – must be empowered as actors for peace and inclusive SD. The forum's debate summary stated, 'Youth want their critical voice to be heard. Too often, indeed, their potential is stifled as they bear the brunt of poverty, unemployment and exclusion. It is telling that the aspirations expressed by youth during the Arab Spring entail both a call for democracy and a claim to social dignity.' This conclusion seems supported by the UNESCO Offices in Beirut and Doha:

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

This does not preclude the need for more prescriptive approaches and tailor-made ESD materials which can easily be adopted by, for instance, teachers in primary and secondary education. Many of the education systems these teachers work in are relatively bound to national curricula characterized by standardized and prescribed teaching content and materials. These apparently predominant education systems leave limited space for more problem-based, interdisciplinary and collaborative student participation and learning. The examples below show a more instrumental approach to ESD, where experts develop materials disseminated to certain user groups, often called 'target groups'.

Instrumental approaches have the notable advantage of reaching greater numbers of people. Thus, a national curriculum mandating schools vying for Eco-School recognition address ESD by meeting preset requirements could reach thousands of schools (and hundreds of thousands of students), but not necessarily in a meaningful manner. In this sense, there may be a trade-off between reach and depth.

In the coming biennium UNESCO Almaty will focus on objectives relevant to country UNDAF outputs [in the Central Asia Environmental Region] in the area of environmental sustainability to prepare the educators to integrate national sustainability issues in their work through:

- *development of the ESD-related content of teaching-learning materials based on Central Asia priorities for sustainable development (Green Pack).*
- *testing and assessment of the resource materials developed through country ESD and ASP networks.*
- *endorsement of ESD materials for secondary schools by the Ministry of Education for dissemination and teacher training (GMES, UNESCO Field Office, Almaty).*

In Mongolia, UNESCO supports the Government's efforts of mainstreaming ESD in education systems 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 have 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).

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).

Solidarité Laique, a French organization that supports education for development in the context of ESD as defined in the official instructions of the French Ministry of Education, sees as one key objective 'the integration of the concept in the school curriculum and its implementation in the official curricula and textbooks'. Clearly, many regions worldwide have a real need for usable and (literally) teachable ESD materials to be developed and distributed. Such materials often need to be authorized by government agencies before they can enter the formal education system. Yet there are also signals that in other parts of the world the main issue is not (or 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. Whereas 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).

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 education. 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).

Conclusion

Despite the continued strong presence of hierarchic top-down and instrumental approaches to education, teaching and learning, spaces are opening up for more process-oriented transformative or eco-pedagogical ESD approaches requiring higher levels of participation and self-determination. As a result, ESD advocates and practitioners are looking for alternative teaching and learning strategies, as well as more interactive ways to engage multiple stakeholders. Again, a country's tradition of governance might affect whether it emphasizes a more pedagogical orientation towards ESD implying social learning, participation and capacity-building or a more instrumental orientation emphasizing changing people's behaviour. There are also signs that in countries where the formal space allotted to participation and democracy is limited, CSOs, NGOs and ICT-mediated social networks create spaces outside the formal system to address sustainability issues.

In conclusion, the 'E' in ESD can be conceptualized in different ways according to the space allotted to participation, self-determination and autonomous thinking. A narrow space generally results in more transmission-oriented modes of ESD with a strong emphasis on instructional forms of teaching and knowledge transfer. While such approaches may have the advantage of reaching greater numbers of people, their ability to engage them meaningfully in sustainability challenges may be limited. When this space is broad, forms of ESD involving higher levels of participation, self-determination, autonomous thinking and knowledge co-creation may emerge. The increased realization that there are no clear-cut answers to many sustainability questions, or solutions to sustainability issues that apply universally, entails shifting towards engaging a range of stakeholders to explore sustainability issues at the local level. The latter versions of ESD require alternative forms of teaching, learning and stakeholder interaction wherein critical thinking, meaning-making and capacity-building for SD become more important.

Chapter 3: The rise of new forms of teaching and learning

As the DESD unfolds, a pedagogical shift seems to be occurring in ESD. Thanks to the growing space and demand for more transformative modes of ESD, alternative forms of teaching and learning (see this chapter) and stakeholder interaction (see Chapter 4) are on the rise. Our sources provide examples of such new forms (although some may not be considered new, but are moving from the margins to the mainstream). This section will present these emerging forms of learning and interaction and support them with data. The literature review that forms a key entry point for this report (Tilbury, 2011) identified four key processes underpinning ESD frameworks and practices:

1. processes which stimulate innovation within curricula as well as through teaching and learning experiences;
2. processes of active and participatory learning;
3. processes which engage the 'whole system'; and
4. processes of collaboration and dialogue (including multi-stakeholder and intercultural dialogue).

This chapter will highlight the first two processes by focusing on changes in curricula and preferred modes of teaching and learning in the context of ESD. The next chapter will focus on processes of collaboration, dialogue and multi-stakeholder interaction designed to bring together social groups that share common challenges but often work alongside instead of with each other.

The GMES designed for this phase of the DESD distinguished nine types or forms of learning associated with ESD. Some may be considered conventional (e.g. transmissive learning and disciplinary learning) and others, more modern (e.g. multi-stakeholder social learning and system thinking-based learning). The nine are described below.

Discovery learning: immersed in a rich context where they encounter some element of mystery, the learners become curious and begin to make sense of their encounter through exploration and meaning-making.

Transmissive learning: uses didactic skills (e.g. presenting, lecturing, storytelling) and supporting materials (e.g. workbooks, instruction forms, visuals) to transfer a predetermined body of knowledge, set of rules or code of conduct to the learners.

Participatory/collaborative learning: although not identical, both emphasize working together toward learning and learners' active participation in the learning process, which tends to focus on resolving a joint issue or task determined by the learners themselves or predetermined by others.

Problem-based learning: focused on resolving issues or solving a real or simulated problem to better understand the issue at hand and sometimes find ways to make an actual real-life improvement. In some cases the issues and/or problems are identified by the learners themselves; in others, they are predetermined by others (e.g. teachers, experts, commissioning bodies).

Disciplinary learning: uses questions of a disciplinary nature as a starting point for learning with the aim of better understanding the underlying principles and expanding the discipline's knowledge base.

Interdisciplinary learning: takes issues or problems as a starting point for learning, and requires the learner to explore them from a range of disciplinary angles to come up with an integrative perspective on improving or resolving them.

Multi-stakeholder social learning: brings together people from various backgrounds with different values, perspectives, knowledge and experiences (both from inside and outside the group or

organization initiating the learning process) to creatively find answers to questions lacking ready-made solutions.

Critical thinking-based learning: exposes and questions the assumptions and values people, organizations and communities live by and challenges their merit from a particular normative point of view (e.g. animal well-being, eco-centrism, human dignity, sustainability) to encourage reflection, debate and rethinking those assumptions and values.

Systems thinking-based learning: seeks to see connections, relationships and interdependencies to view the whole instead of the parts (recognizing that the whole is more than the sum of its parts), but also to understand that intervening in one part of the system can affect not only the other parts but the whole system.

Figure 3 shows the number of times the 213 respondents from 102 countries checked the above-mentioned forms of learning (of which they were given shorter descriptions than the above-listed, which could imply a different interpretation of their meaning). Using 101 hundred checks for a single form of learning as an arbitrary cut-off point, those most mentioned were: discovery learning, systems thinking-based learning, critical thinking-based learning, interdisciplinary learning, problem-based learning and participatory/collaborative learning.

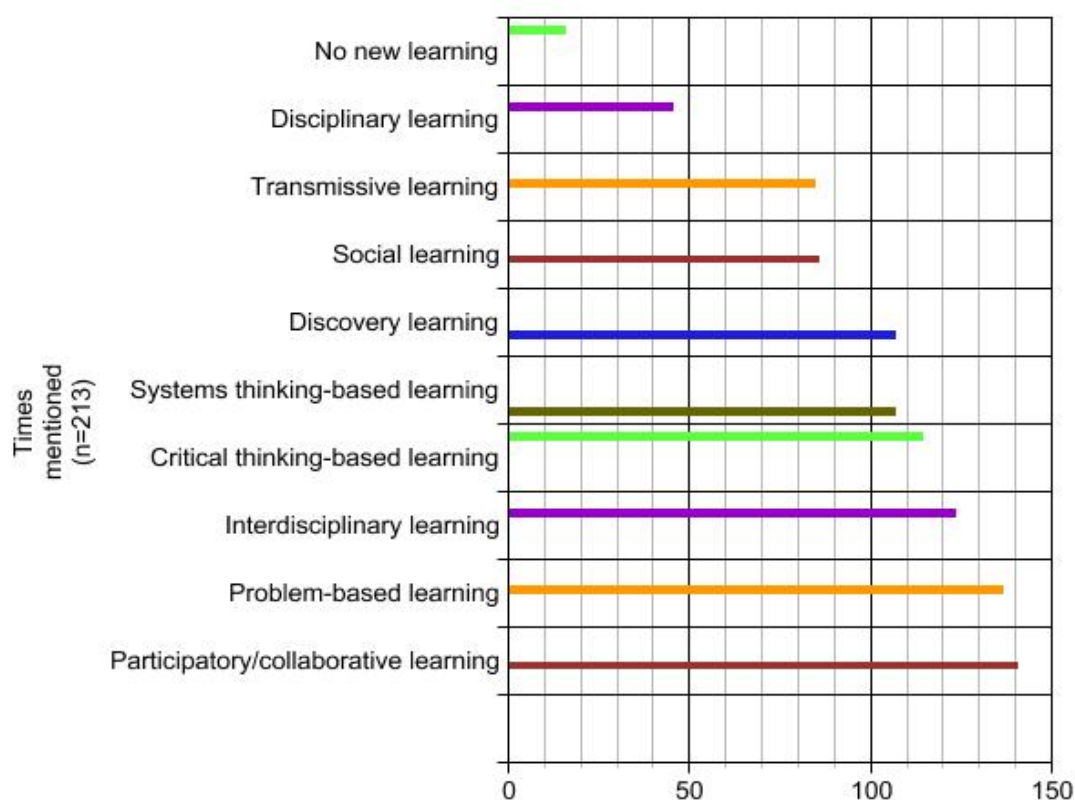


Figure 3: Types of learning associated with ESD as identified in the Global DESD Monitoring Survey

Many GMES respondents commented on their choices. A recurring point was that ESD can never consist of one form of learning but rather requires blends of learning tailored to the learner group (e.g. based on age, prior knowledge, interests, abilities) and to the context in which the learning takes place (e.g. safety to learn outside the classroom, space in the curriculum, pedagogical climate, cultural traditions, political climate) and the resources and support available (e.g. facilitation, teacher competence, teaching materials, ICT, money).

[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 may be more effective if our teaching is directed to facilitate learners in 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).

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).

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

In some specific issues particularly for [young children], sometimes it largely depends on the type of area the school is located in (respectively with where the child lives). For example, in some big cities, for some schools it is more difficult to have experimental or research activities in nature (GMES, Bulgaria).

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

The Centre of Environmental Education (CEE) in India provides a number of examples of blended learning through ESD. The Sanjeevani project uses an experience-based learning approach, which is linked to the school curriculum through developing the potential of schools for community-based conservation and strengthening its education approach. Another CEE example is the Anandshala which means 'school of joy' is an approach developed in partnership with UNICEF and Government of Gujarat. Anandshala represents 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, CEE, India).

Sixteen respondents also mentioned other forms of learning, including: 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 cornstarch. 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).

A UNESCO Chair from Spain adds three forms of learning that connect with systems thinking-based learning:

- learning to interpret globalization in terms of systemic interactions;
- learning to think within a new paradigm of complexity the environmental issues (ecological and social) and everything related to education for SD;
- learning to apply to each context the concepts, theories and proposals from this new paradigm to promote a commitment in the local sphere and have a global influence.

We spread through our programme and courses a new paradigm based on complex thinking and a systemic approach, which consists of a real epistemological and methodological change in order to interpret environmental issues (ecological and social) and sustainability. At the same time, we try for our students to apply learning in their own contexts to promote commitment with transforming action and understanding the local/global relationship (UNESCO Chair, Spain).

A UNESCO Chair in France expresses a sentiment heard not only in many French-speaking countries, but in other 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 bringing to new behaviours. The launching of the Decade opened minds and curricula in order to bring better answers to our society (UNESCOChair, France).

Figure 3 also indicates that some respondents did not see any new forms of learning emerge within the context of ESD, which could mean that they do not consider those listed in the survey as new or emergent in the context of ESD. Some respondents with an environmental education background point out that many of these distinguished learning approaches have long existed in the field of EE and related educations. But some observe that many of the choices provided in the question simply represent good education.

The types of learning listed above are not new and have been a concern of Environmental Education and other 'Educations' for many years. Specifically new [thanks to] ESD is the future orientation and the task to have the ecologic, economic and social aspect be considered (GMES, Austria).

Many of the types of learning above clearly can contribute to ESD, yet it is not apparent to me that these types would have been newly introduced because of ESD implementation. They were used before in Environmental Education, in normal mainstream education, etc. (GMES, Switzerland).

... 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 point made in the preceding excerpt. It takes as a starting point a number of basic principles of 'good education': creating a safe, stimulating atmosphere during lessons, providing a democratic learning space which awakens and encourages students' creative abilities, using teaching methods and procedures that enable students to enter into dialogue and engage in cooperation based on their individual learning style and creating an image of more sustainable lifestyles that are within the students' reach.

The Ukrainian 'Lessons for sustainable development' curriculum has a number of distinctive characteristics: it 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 develop their confidence that they, their community and humankind have a worthwhile future that they can help shape (Mehlmann et al., 2010).

Three languages – English, French and Spanish – were used in the GMES. A closer look at differences in the answers to the question on ESD-associated forms of learning revealed both commonalities and differences. Table 1 shows the various rankings per language area, from 1 (most mentioned) to 9 (least mentioned). Forms of learning that were marked equally were assigned a shared ranking. A high level of agreement seems to prevail over the importance of participatory/collaborative forms of learning. Notable differences can be found in the ranking of transmissive learning (rank 1–2 among those responding in French but 8 among Spanish and English responders) and critical thinking-based learning (3rd and 4th respectively among Spanish and English-language respondents but 9th among French respondents). These differences may point at cultural differences over educational traditions and critical thinking.

Table 1. Rankings of various ESD-related forms of learning according to the language in which the respondents responded.

	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

Co-evolution

It would seem that in some contexts at least, ESD's development and inclusion in the curriculum is causing a co-evolution of pedagogy. In those contexts, the integration of ESD in educational processes goes hand-in-hand with a rethinking of the kind of learning that is necessary to adequately address sustainability issues. As such, it can also become a catalyst for educational reform.

Education for Sustainable Development has in general reshaped 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 – which leads to the question, 'What is the relationship between the emergence of ESD and the apparent increase in these new forms of learning?' Some respondents note that the very phrasing of the question in the GMES might suggest ESD itself is bringing about changes in learning styles or forms of learning, but that this actually may not be the case.

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).

Preliminary results showing increased student engagement (intellectual, academic and social) in school point to the evolutionary nature of both pedagogy and the 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.

It's tough to say and probably too soon to know.

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

So far, research capturing the co-evolution of the sustainability content, pedagogy and increased student engagement is conducted on a limited scale. While the anecdotal evidence is not solid enough to draw firm conclusions, it is a promising direction for further exploration. Related studies illustrate that the discourse has shifted from seeing ESD as something to add-on to education and learning to seeing ESD as a mechanism for rethinking education and learning.

Conclusion

Irrespective of the causality that can or cannot be established between the presence of ESD and the emergence of new alternative (and previously ignored or marginalized) forms of learning, the combined responses collected in the context of the second phase of the DESD M&E exercise do seem to point to the need for well rounded, interactive, integrated and blended forms of learning allowing for the development of the whole human being. The description provided in GAIA's 'Living and Learning' pedagogy perhaps captures this best:

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 for different, even contrasting, points of view; and emphasizing the needs and health of the whole (KIS, GAIA).

Chapter 4: Learning in distinctive ESD contexts

4.1 Introduction

Whereas the previous chapters presented and discussed the meanings of ESD and the types of learning mostly associated with ESD today, this chapter will focus on the various ESD contexts that are usually distinguished: ECCE, primary education, secondary education, higher education, TVET, non-formal education and education in the commercial/private sector. Our purpose is not to repeat the descriptions and discussions of the new forms of teaching, learning and multi-stakeholder interactions found in the previous chapters, but to reveal trends in processes and learning within each of the contexts as well as some trends enabling and/or hindering their development. All the sources mentioned in Chapter 2, many of which come from GMES respondents' comments, are exemplary. It should be noted that some ESD contexts were better represented than others, with higher education and primary education the most represented and education and learning in the commercial/private sector and ECCE, the least (Figure 4).

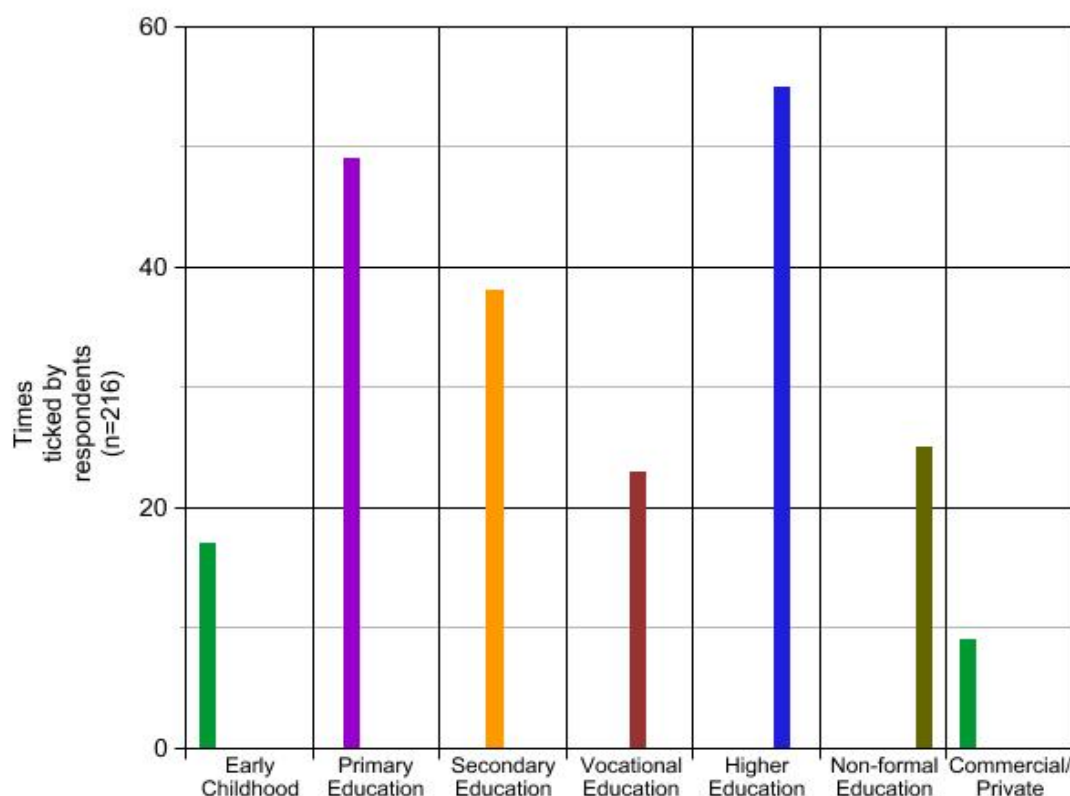


Figure 4: GMES respondent backgrounds in the various ESD domains.

4.2 Early childhood care and education

ECCE refers to programmes which in addition to providing children with care, offer a structured and purposeful set of learning activities 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 onward and include organized learning activities averaging at least two hours per day and 100 days per year.

Based on the GMES, attention to sustainability is on the rise and better articulated in ECCE than earlier on in the Decade (which mainly involved coordinated efforts to conceptualize and explore ESD's possibilities and boundaries). Yet ESD in ECCE is still marginal – only 10 out of the 213 respondents were able to or chose to respond to questions on this ESD context. The availability and

accessibility of ECCE varies significantly around the world, from around 85 per cent of young children enrolled in countries like Sweden to enrolments below 5 per cent in some of the poorest countries. The underlying motives for enrolling children in ECCE can also vary, from offering a young child a stimulating and healthy place to develop in addition to the home environment, to parents being unable to care for their children at home because of work or other reasons or children not having parents or a home altogether. There are also price variations, from free public or subsidized low-cost ECCE to expensive private ECCE.

There are 313,656 children aged 0 to 5 years old in Jamaica. Statistics indicate that there is enrolment of 96.4 percent 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 (UNICEFa, n.d.).

Box 4. ECCE in Jamaica (Source: UNICEF www.unicef.org/jamaica/children_1568.htm)

In addition, pedagogical climates vary, from a freer and more discovery-oriented climate in a stimulating and well-staffed environment (see Box 5), to a more efficiency-oriented environment fulfilling basic primary needs (food, shelter and sleep), to a more academic-oriented environment where parents hope their children get a head start academically. In short, the contexts in which ECCE operates are quite diverse and ESD encounters different possibilities and constraints in each one.

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 multicultural 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.

Box 5. Kindergartens as a learning context for ESD (Source: Finnish UNESCO Series on ESD).

To create ECCE conducive to the type of learning environment described in Box 5, it is essential to establish policies and frameworks recognizing the importance and benefits of such a social environment for a child's development. At the same time, those guiding young children need to be aware of the key elements and characteristics of a pedagogical climate conducive to such learning while being able to create space for and guide such learning.

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 throughout 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, seeking strategies to discover the components of the surrounding environment, and interacting with others (KIS, Algeria).

The kind of formal commitment to integrating ESD in ECCE varies greatly across the globe.

ESD has become an integral component of ECCE: As ECD is one of the key factors to meet the EFA goals and MDG goals, trainings for ECD interventions held everywhere covers ESD (KIS, UNESCO Field Office, 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).

Along with the UNESCO ESD in ECCE Chair, OMEP (Organisation Mondiale pour l'Éducation Préscolaire) has developed a method to get children to respond freely to sustainability-related issues from their own perspective, using images (often children's own drawings) and probing but informal questions.



Figure 5: Using children's drawings as a starting point for children's engagement with sustainability. (Source: KIS, Sweden)

OMEP also developed an ESD project centring on five 'Rs' which could also be applied to people of all ages (Figure 6). The hands-on approach focuses on concrete actions children can take in their local environment and seeks to develop universal values such as respect, equity and diversity by engaging them in critical reflection.

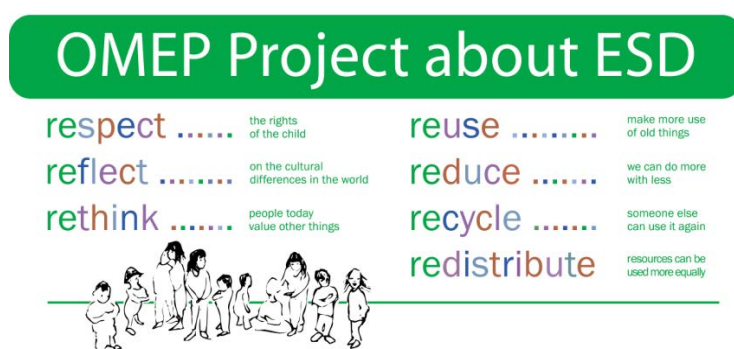


Figure 6: Core elements of OMEP's ESD project for your children. (Source: KIS, Sweden)

OMEP defends and promotes the rights of the child to education and care worldwide and supports activities which improve accessibility to high quality education and care. They report that 9142 children participate in their programme, with an impact on 385 preschools, schools and other settings for small children in 241 cities and regions around the world.

Conclusion

ESD in ECCE is no longer an anomaly in the field of ESD in formal education. Whereas early in the DESD, the necessity of ESD for society's youngest members was in question ('they are too young for such complex and heavy issues, let them be children and not bother with this'), there now is a realization that ESD in ECCE has a role to play. It does not need to be heavy or complex, but can give youngsters a voice and help them express themselves and make sense of the world in which they live. Again, the ECCE context varies greatly: in many parts of the world it is totally absent, or accessible only to more privileged members of society. There is also great variation in its functions, its staffing and its offering – from basic shelter and food, to a nurturing environment fostering discovery and development of head, heart and hands. While it is no surprise that the local conditions limit or enhance its possibilities, the data provided by people working in the sector do show the promise of ESD in ECCE.

4.3 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 (LBCE, Brazil).

Primary education (ISCED 1 – sometimes also called elementary education or primary schooling) refers to educational programmes normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of subjects such as history, geography, natural science, social science, art and music. In some cases religious instruction is also featured. These subjects serve to develop children's ability to obtain and use information about their home, community, country, etc.

Secondary education generally contains two stages: lower and upper secondary. Lower secondary education (ISCED 2) continues the primary level's basic programmes but the teaching is typically more subject-focused and requires more specialized teachers for each subject area. 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 often organized even further along subject lines and teachers typically need a higher or more subject-specific qualification.

Unlike ECCE, there is more history of primary and secondary schools engaging in ESD-related topics, often under the heading of EE or health education, but also more recently under the guise of global citizenship, disaster preparedness, climate change, consumerism and health.

ESD is becoming a part of 'Creative Experience Activity' of the 2009 National Curriculum. ESD is often integrated in related thematic areas – environmental education, green growth education, energy education, climate change education, multicultural 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 in 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 citizenship, 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 the Seoul Office of Education in 2011 in 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).

The Canadian province of Manitoba is reorienting 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 that will be able to grow up as key actors in building a more sustainable society. (KIS, Manitoba Education)

ESD is appearing as part of the curriculum in primary and secondary education in traditional school disciplines. The number of respondents reporting ESD at the primary and secondary level has grown since the first M&E report (see Box 6.).

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

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

In addition to academic subjects like natural science, life skills, lesson topics related to ESD are included in the following five areas: healthy living;

environment and sanitation, mental health; diseases and drugs; social skills (GMES, Myanmar).

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).

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 cities 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 to ensure that our work plan and project focus on ESD in each programme during these 5 years, 2010–2015 (GMES, United Arab Emirates).

ESD is an integral part of the 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).

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

A quick sample from the IBE National Reports in the frame of 48th International Conference on Education, in Geneva, shows that 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. From the 50-country sample 26 countries reported no evidence of ESD in 2008, but by 2012, 16 of them no longer fall in that category. This is an estimated increase of 34% from 2008 to 2012, allowing an approximation of the rate of adoption of ESD (IBE National Report Analysis).

Box 6. Analysis of National Reports from the International Conference on Education

In spite of recent growth respondents say more is needed – more financial support, teacher education, and coordination – for ESD to continue to grow and strengthen.

There is a 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).

An official agency responsible for ECCE which can coordinate all efforts; sustainable supportive strategies; funding support as well as more teacher training, vocational development, more guides for teachers... (GMES, Egypt).

Acquisition of a cadre of trained professionals and different perspectives on what is ESD (GMES, Trinidad).

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 need 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).

The first Decade Report concluded that many national coordinating bodies for ESD, as well as some national policies and strategies, provide some space for ESD and related themes in both primary and secondary education. Some of these policies and strategies are more far-reaching and binding than others: some countries with strong ESD education policies on paper have education systems that are very slow to respond. In other countries with hardly any ESD-specific policies, schools pay a lot of attention to and find it natural to engage in ESD. Finally, other countries with strong ESD policies are beginning to make a difference in education. The excerpts below illustrate these three different manifestations of ESD.

All schools were required to draw up a SD plan by the end of 2010. This plan was to 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. The National Board of Education works in close cooperation with schools and communities to enhance ESD (GMES, Finland).

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).

As a whole, we have accepted and integrated our ESD approach from pre-school to 12th grade (GMES, Bulgaria).

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

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

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 in 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, Italian National Commission for UNESCO, Italy).

Strategies: add-on and integration

There are literally thousands of projects worldwide (some school-based, some extracurricular, through school clubs) and countless teaching materials (many in print and many more in digital form). The challenge of ESD and related educations is to work with two main strategies: 1) the add-on and integration strategy (Table 2) and 2) the whole-system redesign strategy. Whereas the former seeks to widen the space within existing national curricula for ESD, the latter challenges the entire system more fundamentally by reorienting:

- educational content structure (traditionally disciplinary-based and conceptually abstract and separate from the real world, now moving toward exploring community problems through interdisciplinary studies);
- learning processes (traditionally teacher-centred, stressing knowledge transfer and developing cognitive skills, now moving toward student-centred participatory learning based on analytical thinking and decision-making); and
- school organization (traditionally hierarchical with limited teacher, parent and student participation and no connection to the surrounding community, now moving toward more participatory decision-making involving the school and community).

Both strategies are used simultaneously in many countries but the opportunities for a whole-system redesign appear much greater in countries providing more space for participation and community engagement or where entrepreneurship is becoming an important part of education and training.

Table 2. ESD in primary education in selected countries in the Caribbean

Country	ESD status	Demonstration of ESD becoming integrated	Changes needed to make ESD stronger
Bahamas	Being integrated	• ESD is being included in the curriculum of many schools through efforts of NGOs which incorporate ESD into their education programmes, including field trips, school presentations and environmental summer camps • Existence of a national curriculum for environmental education in which students engage in several initiatives relating to island SD • Schools learning from others that are	• Build capacity for teachers to infuse ESD within core curriculum • Integrate ESD into the Ministry of Education's curriculum with sufficient funding

Country	ESD status	Demonstration of ESD becoming integrated	Changes needed to make ESD stronger
Guyana	Being integrated	including ESD • 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	• Provide better training for teachers in the government schools • Increase science literacy requirements in primary schools
Jamaica	Being integrated	• ESD part of primary curriculum, e.g. within attainment targets and objectives of the Social Studies and Science • Values, skills and attitudes learned provide a framework for applying knowledge, leading to SD	• Encourage greater collaboration with associated agencies such as the National Environment and Planning Agency (NEPA) to ensure that the objectives for SD are realized

Table 2 and the above excerpts from the GMES data suggest that the add-on and integration strategy is prevalent, given especially the introduction of ESD as a cross-cutting item (as with EE). Another part of this strategy is to present ESD as a means of teaching the basics (reading, writing, arithmetic and science) in a more relevant and interesting manner.

...there is 'the importance of transforming the environmental education in a true cross-cutting tool.' ... we must not only 'educate and inform broad stakeholder education' but also start with a new reading curriculum and make it more readable. In this way, the environment will become a useful and necessary theme in the access to knowledge. Another objective formulated at the end of the day is to promote the sharing of ideas and teamwork (GMES, Belgium).

With regard to the whole-system redesign strategy, some respondents observe a movement toward reorienting teaching, learning and the schools themselves towards sustainability and becoming more responsive to social changes and community needs. The so-called 'whole-school approach' towards sustainability illustrates this movement: the school's day-to-day operations (energy use, catering and food, staff and student mobility, decision-making structures, etc.), curriculum (course organization, projects, content), pedagogy (approaches to teaching and learning and the atmosphere and environment in which education takes place) and community linkages (involvement of parents and other stakeholders and resources, using the community as a living learning laboratory) are reflected upon and redesigned with a view to creating a healthy place to live, work and learn.

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 SD

criteria and self-evaluation conducted before applying the certificate have also had remarkable impacts on 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 International Bureau of Education).

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 are open to 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 the implementation of programs at the school level and the reforms needed to include sustainability in 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, China).

Chapter 5 of this report addresses these ‘blended forms’ of learning, wherein the boundaries between school and community and the world of work become more permeable.

In some schools, attention to ESD is also leading to reflection on the personal values of both teachers and students, but also of the school as an organization. Critical reflection is encouraged to make those values more explicit and connect them with (un)sustainability. This confrontation can lead to rethinking these values and the practices they support. The Mexican ESD case study from the disaster-prone Tabasco Region refers to this phenomenon (Box 7).

ESD can only be understood from the perspective of a sociocultural outlook. Educators have shifted their paradigm from an image of cognitive systems for learning to more experiential, exploratory, dynamic and self-critical systems.

In Tabasco, as the region is at risk, ESD must continue to question what it is that is learned in schools, and why. Performance standards are being redefined taking into account ecosystem and social considerations, with prime sources of advice and knowledge being teachers, education planners, children, parents and business owners.

Three relevant learning elements are identified: a) Teachers have incorporated an element of self-criticism of contexts; this calls them to reflect on their role as citizens, above and beyond their role as mediators between the school, education contents, and learning outcomes. b) The involvement of students in community actions has allowed barriers to be broken down between 'knowledge' and 'know-how', placing added value on community knowledge banks. c) The school has transformed into a self-managing system with horizontally organized decision making; elements such as consultation, consensus, and participation are featured in all processes.

Box 7. A shift in paradigm towards self-criticism and transformation in the Tabasco region (Source: CS, Mexico)

As schools work more closely with community groups and open up to the wider society they also make connections with higher education, as witness several examples of universities assisting schools with ESD-related activities. Often, university students help schools develop their own ESD activities by providing scientific content knowledge and training teachers and pupils in using monitoring devices or monitoring and evaluating the programmes and projects that have been designed and implemented.

Universities play a significant role in training and developing local resources to participate in the project, managing the interrelationship of health care, education, civil defence and the Red Cross, among others. The project's intervention activities and actions are developed, depending on the territory, in the schools, health centres, houses of family doctors and clinics and institutions, workplaces, factories, industries, cooperatives of agricultural production, basic units of cooperative production, video halls, houses of culture, communities, neighbourhoods and other places that were eligible to have many people participate (GMES, Uruguay).

Another trend in formal education (K–12) is for concepts like global citizenship, intercultural dialogue and life skills to become part of the curriculum. While they are not always immediately connected to ESD sustainability, they 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 include lesson topics related to the following seven areas: environment and sanitation, emotional intelligence, disease prevention and nutrition, drug use, social skills, reproductive health and HIV/AIDS (GMES, UNESCO Field Office, 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 (IS, United Kingdom).

Global Communities for Sustainability (GCS) is an innovative project that facilitates cross-cultural sharing and learning between schools in different countries through sustainability projects. It is meant to promote leadership for sustainability among young people, especially students of high school. Under this programme, local teams comprising a teacher, students and a representative from the local council or community participate in the learning journey. Recently on World Water Day, 22 March 2011, GCS provided a platform for a dialogue between schools from Australia and schools from India on issues and solutions related to water (GMES, India).

ESD school recognition and certification

Schools seeking to become ‘sustainable schools’, ‘Eco-Schools’ or ‘green schools’ strive to address more than just one element of a whole-school approach to sustainability. Established networks of recognized schools, school labels and certification schemes (sometimes supported by a national education authority, other times by a sustainability-oriented NGO) can help schools realize their ambitions. The freedom of schools to determine how they can become sustainable may depend on highly process-oriented schemes (using indicators of participation, self-evaluation, own initiative, creativity, etc.) or more outcome-based schemes (using checklists to determine whether the school has taken specific measures such as becoming CO₂-neutral and integrating sustainability topics in the curriculum). Some school certification schemes use a mix of both.

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 programme 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 programme, 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 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 programmes and application of certificates. Research institutes like Helsinki University have participated in the creation of the SD criteria (KIS, Finland).

FEE 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).

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 programme aims to create conditions whereby schools become places of teaching and learning that contribute to an aware school community, which 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 programme 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 US\$1.7 million annually. The relevance and efficiency of their energy saving programmes is outstanding: in England, a 20% reduction in CO2 over the last three years, in Australia energy savings of up to 71%. The global average for this programme is around 8–10%. (KIS, Denmark)

Coping with changing political climates

So far, all the reported trends seem favourable to expansive ESD in schools. But many respondents are admittedly heavily involved in ESD, believe in its potential and tend to see positive change, while ignoring countertrends that suggest otherwise. Some systems – especially in formal education – have been in place for decades – sometimes even over a century – and are quite resistant to change. A whole-system redesign and inclusion of concepts like transformative learning and community-based action-oriented learning is still rather exceptional. While a change of government can also mean a change of policy (which sometimes means more opportunities for ESD), in times of economic hardship and turning back ‘to the basics’ it might mean a complete reversal or regression of earlier ambitions. Some respondents report as much in both the GMES and key informant survey.

Formal learning does not appear to have been greatly reoriented through its own volition. The formal education system appears more shaped by the socio-economic system in which it sits and serves than the other way around. Education may include more sustainable development ‘content’ but is rarely developed in wider context or ethos to be ‘for sustainable development’ (KIS, United Kingdom).

Within schools there has been more recognition of the importance of ESD within the curriculum. However, since the change in government much of the support and direction for this has been reduced and schools have been looking at different priorities – particularly in England. This has not happened in all schools, and some are still achieving great things, but it is a concern that many schools will find it more difficult to focus on ESD, particularly within the curriculum (KIS, United Kingdom).

There is also evidence of governments trying to bring some order and synergy in all the societal and planetary issues that bombard schools equipped with an already overcrowded curriculum. In some cases ESD is seen as an overarching concept able to provide this.

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

Conclusion

ESD in primary and secondary schools around the world manifests itself in many forms, sometimes under different names associated with EE, CCE, consumer education and DRR education (see also Chapter 3). Even though the data suggest a movement of ESD from the margins to the mainstream, ESD remains marginal as a distinct entity and commonly understood concept in schools’ everyday conversations. However, there is growing recognition that ESD’s value is much greater as a source of innovation in teaching and learning than as just another subject to be added to an already crowded curriculum. The data provided in the country case studies and national ESD journeys, but also in the key informant survey, GMES and internal UN review, suggest heightened attention to sustainability-related topics that affect a community, country or region. This attention coincides with a call for

educational innovation and the strengthening of school-community linkages. Whether or not these trends are causally linked, linking them can help reinforce all three simultaneously, as evidenced in this review. Yet it must be stressed that conditions and educational systems differ around the world: some allow for more space to deviate from standardized national curricula than others. Where there is space for some self-determination and autonomy for schools, teachers and students, the likelihood of educational innovation and cross-boundary learning within society is greater. Where this space is more limited, developing quality educational material that can be linked easily to existing curricula will remain necessary.

4.4 Higher education

Higher education covers programmes with more advanced educational content than ISCED 3 and 4. The first stage of tertiary education, ISCED 5, includes level 5A, composed of largely theoretically based programmes intended to provide sufficient qualifications for gaining entry to advanced research programmes and professions with high skill requirements, and level 5B, where programmes are generally more practical, technical and/or occupationally specific. Programmes in the second stage of tertiary education, ISCED 6, are devoted to advanced study and original research and lead to an advanced research qualification. (Global Monitoring Reports, UNESCO)

An analysis of the *International Journal of Sustainability in Higher Education (IJSHE)* reveals that by far the topics most covered during its nine years of existence (2001–2010) were environmental management, university greening and reducing a university's ecological footprint (Table 3). In more recent volumes, articles on pedagogy, learning, instruction, community outreach and partnerships appear on the rise.

Table 3. Thematic focus of articles published in the first nine volumes of IJHE (Source: Wals and Blewitt, 2010)

Area	no. 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: ¹³	178	100

¹³ This analysis was based on a quick scan of the journal's online tables of contents and the listed keywords for each article. A few articles that did not explicitly focus on sustainability in higher education were not included.

Today there are still many examples of universities seeking to reduce their environmental or ecological footprint through often student-led ‘greening the campus’ initiatives. Their curriculum also features ‘bolt-on’ (adding new courses and modules containing elements of ESD) and ‘built-in’ (integrating sustainability in existing study and research programmes) approaches.

At the University of Guyana (UG), teaching, research and outreach activities support ESD. Specifically, the School of Earth and Environmental Sciences (SEES) offers specialized 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 is also actively engaged in awareness-raising and educational activities among the University populace as well as the general public organizing and hosting 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).

More universities also seem to be engaging in the fundamental challenge of reorienting teaching, learning and research to develop new mental models, competencies and innovations that can contribute to sustainable living. This in turn is leading to alternative views of science itself and the role of the university in society. Empirical analytical and reductionist ways of understanding the world need to be complemented with more integrative and holistic ones, as well as methodologies and methods better suited to coping with complexity, uncertainty and contested knowledge.

Along with such a reorientation, new forms of learning are emerging (Box 8).

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

Box 8. Learning and instruction approaches and methods featured in IJSE articles (Source: 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, IAU).

... 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... It may be more fruitful to adopt a triple-helix approach [to SD] as opposed to a three-pillar approach (UNIR, UNEP).

The idea of the university as an ivory tower and science as a commodity is being replaced by the idea of a university serving the surrounding community. This shift is however not widespread as most universities see public financial support disappearing and feel the need to become more efficient and business-like to survive (Box 9).

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 marketize and privatize university services in society. It, therefore, involves a broader post-colonial intellectual project of reconceptualizing African universities, their relationship to democracy and the societies, cultures and environments in which they are embedded.

Box 9. The African MESA partnership in higher education (Source: UNEP, 2008).

Despite early signs of a transition in some parts of the academic community, sustainability is still largely external to the higher education student, faculty member and administrator. Often 'SD' is just another course or research project, which is just as expendable if it does not pay its way. The current financial crisis affects that many regions of the world also influences university operations and course offerings.

While many respondents underline the difficulty of reshaping deeply entrenched routines, structures and practices, some universities are 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 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 (UNIR, UNEP).*

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 (RCEs) 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).

The consolidation of the Regional Technical Universities, which by their nature – local, regional, and so on – led to the National Training Programmes. This has great potential in spreading the message of sustainable development through not only their academic programmes, but their close relationship with the surrounding communities and the environment in which they are rooted (GMES, Cuba).

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 (RED Instituciones de Educación Superior – RED IES). The goal of RED IES 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).

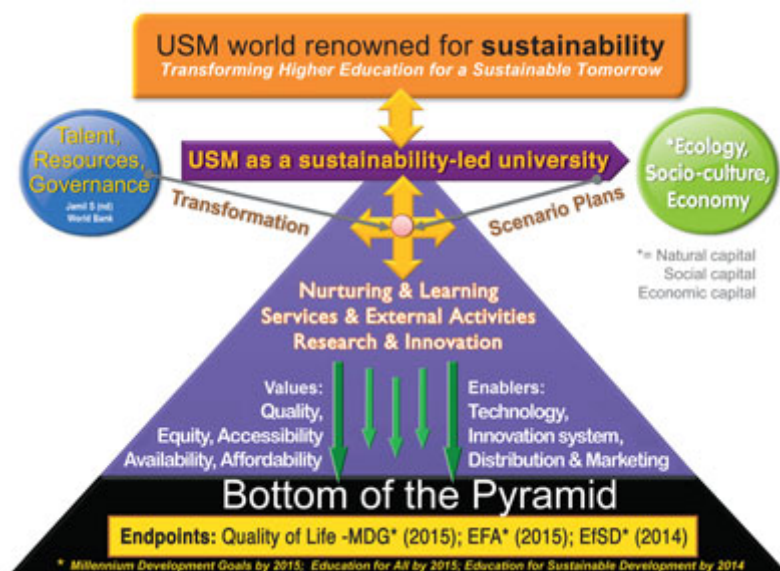
At the level of higher education, a consortium was formed among six universities (Universidad de Santiago de Chile, Universidad de Talca-Sede Santiago, Universidad Tecnológica Metropolitana, Universidad Andrés Bello, Universidad Bolivariana and Universidad de Artes Ciencias y Comunicación) to implement 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 programmes, 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).

Some respondents note that most of the universities engaged in sustainability focus on education rather than research. Strong research universities tend to pay less attention to ESD and sustainability in general, although some of the research programmes influenced by national (e.g. the National Science Foundation in the United States) and transnational organizations (e.g. the World Bank or the European Union) are focusing more on sustainability-related topics such as climate change, food security and the bio-based economy. Concurrently, the development of sustainability-oriented universities and 'sustainability science' (transdisciplinary in nature) is also on the rise (Box 10).

A range of universities, mainly of those focused principally on teaching. The more research-intensive universities are less interested in curriculum change, in my experience. The UK's 'People and Planet' Green League Table has had a major impact, and those institutions scoring highly . . . have been approached for support by other institutions in the same cohort of universities (GMES, United Kingdom).

University Sains Malaysia (USM) was selected by the Malaysian Ministry of Higher Education to implement the Accelerated Programme for Excellence (APEX) programme. USM has built its

education, research and community engagement programmes 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, transdisciplinary and research-intensive that empowers future talents and enables the bottom billions to transform their socio-economic well-being.' USM is also part of the UNU-recognized RCE system.



Box 10. University Sains Malaysia as an example of university reorienting itself entirely towards sustainability and receiving national recognition for doing so. (Source: KIS, USM, Malaysia, and www.kck.usm.my)

An interesting phenomenon in Institutions of Higher Education (IHEs) is the existence of rankings and tables that benchmark and measure performance. Indexes like the Times Higher Education Index, the QS Index and the Shanghai Index tend to focus on indicators like 'research output', 'internationalization', 'student evaluations' and 'external research funding', but pay no attention whatsoever to sustainability. The Green League Table in the United Kingdom does attempt to do this by measuring a university's performance through a range of sustainability indicators that yield noticeably differing results in the case of some universities. For example, the University of Cambridge is ranked number 1 in the world according to the 2011/12 QS World University rankings, but only 68th in the United Kingdom in the Green League Table compiled by [People and Planet \(P&P\)](#), a coalition of UK students dedicated to holding universities accountable on environmental and ethical issues¹⁴. According to P&P, green university rankings are growing in prominence as both students and universities place more importance on environmental responsibility. Interestingly, the Green League Table creators have included exemplary case studies of each ranked university representing what they consider to be sustainability-oriented practices.

Over the past 10 years, the Global University Network for Innovation (GUNi), created by UNESCO, the United Nations University and Polytechnic University of Catalonia in Spain, has researched, compiled and shared a wealth of innovations in higher education born out of an increasing concern for sustainability issues. The GUNi series on the social commitment of universities spans four expansive volumes outlining and detailing transitions towards sustainability in higher education. Combined, they provide a rich body of evidence of genuine engagement in sustainability by universities and colleges

¹⁴ For the 2011/12 Green League Table, go to: <http://www.topuniversities.com/student-survival/student-life/green-universities-higher-education-and-environmental-sustainability>

worldwide. The most recent volume provides regional perspectives and visions for transformation highlighting hybrid forms of learning, the use of diversity, the transformative power of sustainability, knowledge co-creation and a reconfiguration of university-community-private sector relationships (GUNI, 2011).

IHEs are beginning to contribute to the development of sustainability competence (Table 4) both within and outside the higher education community through courses, professional development programmes, community outreach activities and post-initial education and training in both the public and private sector. Some universities are providing resources for members of the wider academic community who can be considered SD change agents and for people wishing to pursue careers in ESD within or outside the university structure.

Table 4. Generic sustainability competences based on the German ideas of *Gestaltungskompetenz* (Source: based on work by de Hann, 2010; Michelsen and Adomssent, 2007)

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, transcultural understanding and cooperation
- Participatory competence
- Planning and implementation competence
- Ability to feel empathy, sympathy and solidarity
- Competence to motivate oneself and other.
- Competence to reflect in a distanced manner on individual and cultural concepts

The latest UNECE evaluation of the implementation of the ESD Strategy¹⁵ signed by UNECE member states notes the need for a distinction between ESD competence and SD competence.

Despite the focus on the development of ESD competence, tools and materials in the education section, various countries indicate that they are facing difficulties in realizing this objective. There is a need for distinction between SD competence (e.g. citizen's capacities to contribute to sustainable living both professionally and personally) and ESD competence (e.g. an educator's capacity to help people develop SD competence through a range of innovative teaching and learning practices). *Better articulation of such competences is likely to help in designing and supporting professional development strategies that could strengthen such competences.* The work of the UNECE expert group on ESD competence could prove to be quite crucial in this respect. ESD-related teacher training programmes should take advantage of the new insights obtained in relation to ESD competence.

Box 11. ESD competence and SD competence: the need for some distinctions (Source: UNECE, 2011).

¹⁵ See UNECE Strategy for ESD (UNECE, 2005; CEP/AC.13/2005/3/Rev.1) and Guidance for Reporting on the Implementation of the UNECE Strategy for Education for Sustainable Development (UNECE, 2009; ECE/CEP/AC.13/2009/10).

UNECE is also responsible for a comprehensive model of ESD competence at three levels (individual, organization and society), distinguishing five competence domains: knowledge, systems thinking, emotions, values and ethics, and action (Sleurs, 2008). The model has been designed collaboratively for teacher education purposes by a number of teacher colleges, NGOs and universities in UNECE countries, but is also used in higher education contexts. The model uses *Learning: the treasure within* as a foundation (Delors, 1996).

UNECE has also published *Learning for the future: Competences in Education for Sustainable Development*, which offers policy-makers recommendations on professional development spanning all sectors: teachers and educators, managers and leaders, governing and managing institutions, curriculum development and monitoring and assessment. It identifies a framework of core ESD competences for educators assembled into three categories: the holistic approach, envisioning change and achieving transformation. The model also has its roots in the above-mentioned Delors model.

Table 5. UNECE competences in ESD for educators (Source: UNECE, 2011)

	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 SD
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

Finally, over 200 universities have signed the UN DESD-endorsed Earth Charter as an ethical framework for guiding education and research. The Earth Charter deviates from other sustainability-oriented manifests signed by universities in that it considers ethical and more bio-centric and eco-centric perspectives as essential to moving towards a more sustainable world. Several guiding frameworks for teaching with the Earth Charter have been developed and a number of case studies of schools and universities using the Earth Charter as a backdrop for education are available through the Earth Charter website (www.earthcharterinaction.org).

Conclusion¹⁶

IHEs are beginning to make more systemic changes towards sustainability either by reorienting their education, research, operations and community outreach activities simultaneously or focusing more often on a subset thereof. They are doing so amidst educational reforms towards efficiency, accountability, privatisation, management and control which are not always conducive to reorientation. Some universities see sustainability as a new way of organizing and profiling themselves.

The directions for higher education outlined in the 2008 Gothenburg Declaration (Holmberg et al., 2008) seem to have become a reality (albeit slowly) in all regions of the world. The declaration stated that IHEs need first and foremost to become open ESD centres and hubs: an ESD interface between the local and global community addressing local sustainability issues, but also using its global tentacles and networks to take advantage of perspectives and expertise grounded in other geographical contexts. IHE expertise in both ESD and SD needs to be globally and openly accessible to all members of society (for instance, through open-source internet-based platforms allowing scientists, community groups and individual citizens worldwide to contribute to and benefit from this new kind of research), with mechanisms enabling them to contribute to continuously advancing SD and ESD expertise.

Secondly, IHEs need to develop knowledge and education pervading and transcending disciplines, generations, localities and cultures. The quest for a more sustainable world requires a spirit of innovation and cutting-edge knowledge to deal with the complexity, uncertainty and risks characterizing SD challenges. IHEs are beginning to advance systemic thinking by examining connections, relationships and interdependencies, as well as developing and introducing new forms of learning that can help people understand and engage in SD.

4.5 TVET and learning in the private sector

TVET – or education for the world of work – is a provider of learning and life skills programmes for young people and adults. Not only is TVET considered essential to expanding skills and developing the competences necessary in rapidly changing labour markets, it is seen as a solution to poverty reduction and a support for socio-economic development. Apart from basic literacy and numeracy, technical knowledge and the capacity to work productively in teams, people's preparation nowadays must include vocational and social skills, together with values that help build harmonious societies.

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).

Seen through the lens of TVET, ESD is a requisite and facilitator for sustainable livelihoods and occupations. Integrating ESD in TVET is essential in order to develop knowledge and employability skills that support economic development and enable people to improve their daily lives. Many international development programmes and global organizations like the UN and the World Bank invest in projects to reorient vocational and higher education towards the needs of the labour market and more broadly of the community. TVET is increasingly considered a lifelong learning programme occurring not only in schools but also in the workplace as a part of an organization or company's human resource development efforts. The UNESCO–UNEVOC International Centre for Technical and Vocational Education and Training (UNESCO–UNEVOC) assists UNESCO Member States in strengthening and upgrading their TVET systems, as well as aligning them with the principles of SD (Source: www.unevoc.unesco.org).

¹⁶ The conclusion makes use of the Gothenburg Declaration's section on higher education to which the author contributed along with international experts in ESD in higher education.

When comparing TVET's engagement in sustainability and ESD today with earlier in the DESD and even as recently as the mid-DESD review, a shift seems to have occurred. Whereas in the early years of the Decade ESD proponents were looking for ways to engage TVET in sustainability issues, today businesses and industry are demanding that TVET reorient towards green jobs and the greening of non-green jobs. Faced not only with changing consumer demands, the impacts of environmental crises, resource scarcity and carbon-reduction policies, but also with new green technologies requiring different skills, the private sector is recognizing the importance of updating workers' capacities to respond to these changes. Ministries of education as well as ministries of economic affairs worldwide appear to be pushing for an upgrade of TVET that includes preparing people for a 'greener' way of producing (Box 12).

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 FET sector is a state priority. Following this there have been attempts to institutionalize ESD-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 [hot water 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 fifty youth around the theme of green innovation. The scope of green retrofitting includes installation of photovoltaic technology, solar geysers, water harvesting, low energy lighting and cooling systems among other built environment adjustments to meet international compliance standards (NJESD, South Africa).

Box 12. TVET for a green economy – example from South Africa

In some countries vocational education is connected to or embedded in secondary education, thereby establishing a link with more generic competences students may need to be successful after leaving school. These connections are also emphasized by the UNESCO Leaders Forum and TVET-oriented networks such as the European Training Foundation (ETF)¹⁷.

... 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).

The intersectoral and interdisciplinary dimensions of education for sustainable development, which has deep ties with technical and vocational training and education (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,

¹⁷[www.etf.europa.eu/webatt.nsf/0/7FCF8F7B72565E39C12579030030F3F5/\\$file/DraftPositionPaperETF&SD.pdf](http://www.etf.europa.eu/webatt.nsf/0/7FCF8F7B72565E39C12579030030F3F5/$file/DraftPositionPaperETF&SD.pdf)

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).

In ongoing curricular frameworks for technical and vocational education, this topic is approached from vertical and cross-cutting core objectives. Besides, some schools belong to the National System of Environmental Certification of Environmental Establishments (SNCAE), whose membership is voluntary (Regional Synthesis Report, Caribbean).

ESD has become a key and/or integral component of technical and vocational education

In some places ESD is taken on board. [It] became an integral part of the new modular curriculum emphasizing this item through entrepreneurship, democracy and human rights and increased the investment on practical training. They expect the forthcoming reports and results analysis. (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 and cost-benefit analysis, with environmental and social costs included. As far as art school is concerned, an 'architecture and environment' curriculum is available (<http://www.istruzione.it/getOM?idfileentry=217468>) (GMES, Italy).

Yet there are signals that in some countries TVET is not (or hardly) responding to the challenges posed by (un)sustainability, and 'business as usual' prevails.

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).

The respondents and national ESD journeys addressing the role of TVET do refer to the rise of the green economy as an opportunity to establish ESD in TVET. But there seems to be a difference between TVET schools responding to sustainability out of mere concern for economics or employability and those responding out of a concern for the well-being of the planet. The latter tend to consider a green or sustainable company not as one that keeps going by maintaining profitability but rather as one that finds a dynamic equilibrium between the 3Ps: People, Prosperity and Planet. The former tend to believe there is little remiss with the prevailing principles of market-based economic models, but that businesses and industries need to adopt more efficient production methods (World Bank, 2000). These two perspectives are likely to result in different interpretations of how learners should prepare for the world of work.

The commercial and private sector, which obviously has strong connections with TVET as it employs many of its graduates, tends to embrace an 'efficiency' approach (making present ways of doing things more efficient) over a 'redesign' approach (doing things differently or doing different things

altogether). A rising phenomenon in the corporate world is the idea of corporate social responsibility (CSR), which some see as the more fundamental successor of environmental management.

In the case of certain companies, like those within energy efficiency agreements or within ISO standards, it is becoming mainstream. As a whole, with all Finnish companies included, it is beginning (GMES, Finland).

Depending on the branch concerned, CSR is in mostly every sector. Some frontrunners can be found in the food sector, chemical sector, some banks and financial organizations, and in the broader agriculture sector (GMES, The Netherlands).

Some of the main companies and business organizations are beginning to introduce CSR as a part of their core business, and start considering it as an opportunity more than a mere duty or burden. In general CSR awareness is rising in the commercial/private sector (GMES, Italy).

The European Training Foundation developed a position paper (ETF, 2011) on ESD distinguishing five areas in TVET and human capital development policies addressing different work-related objectives in the SD agenda:

1. Promote education geared to developing the values, skills and competences for SD. This includes the promotion of adequate learning environments and the teacher education necessary to make people aware of SD and develop the required competences.
2. 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.
3. Make TVET schools agents for local SD and stakeholders in coping strategies for climate change.
4. Integrate SD into entrepreneurial learning and business education.
5. Include the dimension of SD in the analysis of partner countries' human resource development policies, with a focus on identifying and applying adequate indicators

Objective 3 connects with the multi-stakeholder cross-boundary learning approaches mentioned in Chapter 3 and in the context of community-oriented learning. The ETF objectives – which appear to stem equally from a business orientation and an ESD orientation – support an approach to TVET and entrepreneurial learning that goes beyond 'business as usual.' ETF considers the five areas crucial to helping partner countries meet the demands of SD, responding to the challenges of climate change and using the opportunities contained in the transformation to low-carbon economies¹⁸.

Conclusion

Perhaps the most visible changes to ESD inclusion can be observed both in TVET and in human resource and professional development in the world of work. Driven mostly by economic interests and technological innovations, companies are beginning to reorient themselves towards what is commonly called the 'green economy' and related 'green skills' and 'green jobs'. The demand for a workforce capable of working in such an economy is clearly on the rise and vocational schools are responding by reorienting their curricula. From an ESD perspective, it is important to critically follow this promising trend to ensure that the 'P' for people and the 'P' for planet receive at least equal attention as the 'P' for profit.

¹⁸ European Training Foundation: Sustainable Development and Education and Training, ETF Position Paper, Turin 2011.

The new learning arising from the world of work's new interest in 'green' and CSR is mostly competence-based: students are placed in a real-world context to address authentic corporate sustainability challenges. Competence-based learning around real issues, coupled with competence-based assessment, may also have implications for ESD in other contexts. The idea of TVET schools as agents for local SD is an interesting one, which may need to be further explored during the remainder of the Decade.

4.6 Non-formal Learning

The GMES described non-formal learning as all learning initiated by community groups, CSOs, NGOs and networks that seek to engage citizens (young and old) in sustainability-related issues. Although some of these non-formal learning activities may also involve schools, colleges and universities, they are not a core component of their curriculum. Similarly, the commercial sector's participation in these activities remains peripheral to the core business. Examples of non-formal learning include: a community-based project initiated by a neighbourhood centre focusing on creating organic community vegetable gardens with the support of local schools, a garden centre and local restaurants; and an internet-based carpool system for a town district, initiated by a sustainable-transportation NGO with the involvement of local government officials, commuters, a marketing firm, a web designer and major regional employers. It bears noting that the distinction between formal, non-formal and informal is increasingly arbitrary and artificial: as the previous chapters demonstrate, these forms of learning are mostly linked and simultaneous.

Much of the ESD-oriented learning that respondents primarily associate with non-formal learning stems from local municipalities and organizations (including museums, environmental education centres and national park systems) seeking to enrich or expand their core activities with a sustainability component. Many initiatives see formal education institutions as natural partners, resulting in 'blended' forms of learning where formal, non-formal and even informal learning go hand-in-hand. Some respondents note that ESD grows stronger where there is synergy between community and school-based learning.

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).

When formal education and non-formal education are made complimentary, 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).

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

GMES respondents and case studies addressing non-formal learning also refer to national campaigns and the use of media (including social media) as means for governments and NGOs to highlight ESD-related topics. Here again, linkages with formal education are crucial.

The Italian Commission for UNESCO organizes every year the 'national week' on ESD that gathers hundreds of entities and organizations 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 programmes focusing on SD. Educational and cultural events, including seminars, shows, exhibitions, workshops and cinemas are organized in the framework of these programmes 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).

The particular type of education is mostly carried out by non-governmental organizations. These include Nature Uganda, Uganda Wild Life Authority, Uganda Wild Life Education Centre in Entebbe, and the 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).

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 stakeholders 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 of frequent reports and debates in Swedish media in 2010. The independent national public service radio, television and the Swedish educational broadcasting company, as well as commercial television, have on their own accord broadcasted documentaries, critical societal reports and debates in order to raise public awareness about sustainable development. One example is the radio programme '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 and about 2,000 companies and more than 800 schools participated in the event. In the end, 53 percent 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).

Media

The media (e.g. television, radio, magazines, newspapers and the internet) provide both challenges and opportunity for ESD. The challenge is that in a consumer society, media advertising promotes consumption – a challenge sometimes compounded when companies use the terms 'green' and 'sustainable' to attract consumers for whom they have positive connotations even though the advertised products or lifestyles may be unsustainable rather than sustainable. This phenomenon is sometimes referred to as 'green glossing' or 'green washing'. Critical media literacy is essential to help consumers distinguish between fake and genuine attempts by public and private social groups to

contribute to sustainability and choose which sources to use and trust from the plethora of often contradictory information available on the internet.

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

[P]ersonal 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).

The opportunity, on the other hand, is that the media can be partners in ESD advocacy and delivery by giving it coverage.

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

There is a recognized (by media, business, 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).

In some places, organizations are proactively 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 that assists them in updating 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 centres, etc. Still others have relied on media to translate into everyday language the most recent scientific insights (KIS, Norway).

Other educational organizations are creating ESD training manuals and workshops for the media. For example, UNESCO published *Media as partners in education for sustainable development: a training and resource kit*, piloted by field offices (Bird, Richard and Warwick, 2010).

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 Executive Board of UNESCO).

A media interest group is also attached to the Environment & Sustainability Education Network of Lesotho following the UNESCO-sponsored series of

workshops piloting the UNESCO training and resource kit on 'Media as partners in ESD' that took place in November–December 2010 (ESD Section Report to 187th Executive Board of UNESCO).

The UNESCO Bamako Field Offices 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 involvement.

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 for 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 researches 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 links

There is some indication that ESD in non-formal contexts is increasingly linked to private sector initiatives and the development of entrepreneurship. The examples provided often highlight learning processes designed to develop sustainability-oriented business plans. Empowerment, agency and economic viability are at the core of Asian, African and Latin American initiatives in particular, with community centres and local and regional networks often playing a coordinating role in developing and supporting learning activities.

The programmes and activities with regard to ESD done by the Directorate General of Non-formal and Informal Education are done inside 'Community Learning Centres'. The development of a vocational village-based empowerment paradigm and an environmentally friendly approach in two villages in Central Java [focuses on] understanding the potential of the village and how to design ESD-based business plans. As a result, in the two communities activities have been undertaken that comprise production activities and some small enterprises such as crystal sugar productions, rabbit

husbandry, indigo dye productions, a batik industry centre, and a coffee industry (NJESD, Indonesia).

In Chile, a number of CSOs have used diverse approaches to integrating ESD in their non-formal educational programmes. Some strategies emphasized linking with companies to harmonize and integrate ESD initiatives with the market economy, while others focused on local-citizen participation, community empowerment and strengthening territorial identity. Still others broadened and recreated the conventional environmental education approach. Box 13 lists three examples.

- In collaboration with the private sector, Casa de la Paz develops educational programmes on Sustainable Coexistence that are oriented towards improving relationships between private companies, the community and local government.¹⁹ 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.²⁰
- 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 programmes focused on the non-formal sphere with base communities at the neighbourhood level. It also implements a programme 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.²¹
- 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 neighbourhood 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.²²

Box 13. Three examples of non-formal learning in and through ESD from Chile (Source: NJESD, Chile).

One should note that respondents mention private sector links more than links to social (e.g. the Occupy movement) and transition movements (e.g. Transition Towns) seeking to build a new society based on different economic principles. This could be due to a lack of representation in this review of the people and organizations connected with such movements. One should also mention that these movements are engaged in sustainability-oriented transformations that require innovative forms of learning.

Learning in non-formal learning

The information generated on the type of learning taking place in the context of non-formal learning was noticeably scarce as few country case studies, national ESD journeys, key informants and GMES respondents were able to articulate its key characteristics. If any conclusion can be drawn at all, it is

¹⁹ Information provided by Carolina Silva of Fundación Casa de la Paz.

²⁰ Information provided by Cecilia Suárez of the Sustainable Development Council.

²¹ Information provided by Pablo Sepúlveda of Corporación El Canelo de Nos.

²² Information provided by Luis Márquez of Ecobarrio El Ceibo de Maipú.

that participating in local development, using local knowledge and recognizing local realities are crucial. Furthermore, much of this non-formal learning takes place at the interface of school, community and the 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 socio-economic 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 onsite 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).

The national ESD journey provided by the Netherlands describes more explicitly the type of learning required to move Dutch society towards sustainability (Box 14). The Dutch national ESD policy is not called 'Education for Sustainable Development' but rather 'Learning for Sustainable Development'. This is designed to emphasize that learning is not limited to schools but also takes place in neighbourhoods, communities, organizations (governmental and non-governmental) and the private sector. The policy distinguishes 'learning individual', 'learning organization' and 'learning society' and specifies 'learning by doing' and 'social learning' as appropriate forms of learning within and among these three levels. The programme also recognizes the importance of civil servants, policy-makers and leaders in governmental organizations learning for SD.

By implementing 'learning opportunities' for civil servants, policy-makers and leaders in governmental organizations the 'learning by doing' is essential, as most of the learning is done by peer-to-peer meetings, network-based exchange, training on the job, exchange of good practices and coaching of individuals and small groups. The learning is situational and in the context of the job ... [T]he process of 'social learning' is formulated in the context of multi-stakeholder [engagement] in dealing with, for example, water, energy, mobility, area/development, building and construction and [management of] production chains. Exchange of values, knowledge and interests are at the base of dialogue in Communities of Practices (COPs) through workshops, articles, incidental meetings and ICT. Learning increasingly takes place in the context of 'Life Long Learning' from pre-school to professional situations.

In non-formal and informal education ESD is ... [particularly] laid on 'learning organizations' (e.g. governmental organizations and district water boards) and the 'learning society' (citizens, professionals and governmental organizations). A large portion of the activities ... is directed

towards involvement of stakeholders, network development, knowledge transfer, competence development and integration of themes and cooperation. [Furthermore,] didactics of sustainability from primary school to university increasingly involve direct experience, experimentation and cooperation with a variety of stakeholders.

Box 14. Non-formal learning in the Dutch ‘Learning for Sustainable Development’ programme (Source: NJESD, Netherlands)

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 (Ministry of Agriculture, Nature and Food Quality, the Netherlands).

Conclusion

Although virtually all respondents and case studies acknowledge that ESD in non-formal learning is crucial and happening across the globe at various levels, the review generates little information on the type and possible design of the learning involved and the competences required to facilitate it. The fact that less assessment, monitoring and evaluation takes place in non-formal learning contexts may explain this lack of information. Nonetheless some noticeable trends are emerging as the boundaries between non-formal, informal and formal learning become increasingly vague as a result of:

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

Whether these trends – some of which are driven more by economic interests that may conflict with sustainability interests – can contribute to strengthening ESD remains to be seen. Here, too, social learning, discovery learning and problem-based learning have much merit as the most appropriate type of learning in this ESD context, but more research is required to substantiate this.

Chapter 5: Multi-stakeholder interaction and systemic change

The previous chapter focused on emerging forms of teaching and learning and pedagogies increasingly associated with ESD around the globe. It demonstrated that much ESD-related activity in schools and universities is increasingly connected to the world outside formal education institutions. Many NGOs, CSOs and private sector representatives also collaborate with formal education systems while still working in predominately non-formal and informal learning settings (UNESCO, 2009a).

This report earlier made the point that the various contexts and educational systems in which ESD emerges vary according to the space available for more participatory and critical approaches emphasizing capacity-building and competence development. When such space is limited, more traditional forms of teaching, learning and knowledge transfer predominate.

Around the world, ideas like the ‘green economy,’ ‘digital age,’ ‘knowledge society,’ ‘communities of practice’ and ‘lifelong learning’ are leading to a reconfiguration or rethinking of the way societal groups connect and become more innovative, creative and resilient. Some consider this drive for systems change and innovation as part of the economic globalization agenda (only worse, as they believe the word ‘green’ is being used to legitimize unsustainable practices – as in ‘green nuclear energy,’ ‘green waste incinerators’ and plant bottles containing up to 30% organic material). Others see it as a great opportunity to break with existing patterns and routines by creating a new ‘dynamic’: new linkages, nodes and configurations of a wide range of diverse actors who creatively and collaboratively build a new society based on fundamentally different principles and values. Regardless, new forms of interaction are indisputably sprouting as a result that have the potential to help people move towards a more sustainable world.

The intersectoral and interdisciplinary dimensions of education for sustainable development, which has deep ties with technical and vocational training and education (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 (UNESCO Leaders Forum, 2011).

The terms informal and non-formal education refer to the collective learning that takes place outside formal educational systems (for instance in everyday life), within families, work places, clubs, web-based communities, etc. Non-formal learning is more or less structured and takes place in study groups, NGOs, social movements, youth clubs, churches, public high schools, etc. Both informal and non-formal learning are characterized by voluntariness, active participation, the exchange of ideas and the increasingly important influence and role of ICTs – all of which are an important part of lifelong learning and occur at the crossroads between formal, non-formal and informal learning.

It is now clear that the quest for sustainability cannot be limited to classrooms, corporate boardrooms, local environmental education centres or regional governmental authorities operating in isolation. Instead, learning for sustainability requires a blending of formal, non-formal and informal education and synergy among multiple societal actors with increased permeability among units, disciplines, generations, cultures, institutions, sectors, etc.

The way we are overcoming the problem: dialogue, building learning communities for sustainability, building a functional and participative structure (KIS, Mexico).

The first Global Monitoring Report (UNESCO, 2009a; Wals, 2009) already stated that a whole range of interactive methods and new forms of knowledge co-creation involving a wide range of societal actors were emerging in response to the new connections and networks being formed around sustainability challenges. Multi-stakeholder social learning often refers to learning that contributes to

and occurs in a 'learning system' in which people learn from, as a result of, and with one another and collectively become more capable of withstanding setbacks and dealing with insecurity, complexity and risks. The GMES explicitly mentioned it as one of nine options in the question relative to ESD-related learning, where it ranked low among the nine but higher than the more traditional disciplinary and transmissive learning (see Figure 3 in Chapter 3).

Organizations and companies generally introduce multi-stakeholder social learning as a means to foster deep or fundamental change processes. It involves bringing together people from various backgrounds (both inside and outside the group or organization) and with different values, perspectives, knowledge and experiences to move towards creatively resolving an issue for which no ready-made solutions exist. Multi-stakeholder social learning:

- involves learning together from one another;
- assumes that we can learn more from one another if we do not all think alike or act alike; in other words, 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).

All SWEDESD programmes are based on notions of social learning and participation and of bringing a variety and diversity of individuals and groups/organizations together. Actual activities have shown that this is possible and that it leads to group dynamics that encourage experimenting with new modes of interaction and learning, which subsequently lead to outcomes and results that would not have occurred if non-diversity and participatory methods had been used (KIS, SWEDESD).

In both in Western and non-Western parts of the world, multi-stakeholder partnerships that use social learning to co-create their own pathways towards sustainability are emerging. The rapid rise of RCEs (100 were established worldwide in early 2012) can be deemed a testimony to the potential of multi-stakeholder social learning.

[In order to advance] ESD through multi-stakeholder initiatives – regional and global networks have been created to provide learning spaces for ESD... Regional Centres of Expertise (RCEs) [represent networks] of existing formal, non-formal and informal organizations mobilized to enhance ESD in a specific regional community. 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 (KIS, UNU-IAS).

The increasingly integrated knowledge networks, which include social networks, have 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 can now add their voices with relative ease so that the perceived size of a movement is larger, which also leads to a stronger draw for peripheral stakeholders (UNIR, UNESCO Field Office, Doha).

One particular strand of multi-stakeholder social learning stems from higher education and research initiatives where universities look for ways to become more responsive to community needs and SD challenges. Responses to the GMES and DESD key informant survey indicate that many higher education initiatives sprouting around the world (e.g. new degree programmes, courses, modules and alternative approaches to learning) emphasize the societal relevance of higher education and the 'science as community' perspective (Peters and Wals, 2012). The challenge of sustainability is becoming a focus of research and education based on the recognition that the pursuit of sustainability is not merely a scientific and technical project. It also comprises complex ethical, philosophical and political dimensions and requires multiple forms of knowledge transcending science. The scientific community is looking for new modes of knowledge creation to address some of the characteristics that affect many sustainability-related issues, including climate change, poverty, biodiversity loss and food security. These include high levels of complexity, uncertainty and controversy with scientist themselves often disagreeing on what is happening and what should be done. These challenges are fuelling a reorienting towards forms of education, learning, research and community engagement that are more responsive to societal needs. As a result, a whole range of associated forms of learning are being reported (such as transdisciplinary learning, transformative learning, cross-boundary learning, anticipatory learning, action learning and social learning). They are both old and new, both similar to and different from those distinguished in Chapter 3 and all bear a strong family resemblance (see also Peters and Wals, 2012) in that they:

- consider learning as more than merely knowledge-based;
- maintain that the quality of interaction with others and with the environment in which learning takes place is crucial;
- focus on existentially relevant or 'real' issues that affect and engage learners;
- view learning as inevitably transdisciplinary, 'transperspectival' and transboundary, in that it cannot be captured by a single discipline or single perspective; and
- view indeterminacy as a central feature of the learning process, in that it is not and cannot be known exactly what will be learned ahead of time and learning goals are likely to shift as learning progresses.

The above characteristics again suggest that 'hybridity' among multiple actors is needed, since opportunities for this type of learning grow with increased permeability among disciplines, generations, cultures, sectors, etc. Examples of hybrid multiple stakeholder configurations – some connected to schools and universities, others to societal organizations or the world of work – are plentiful. They include:

- Revived university science shops as desks (both virtual and real) where members of the community with limited or no financial resources can commission research (see www.livingknowledge.org);
- Networks of community-engaged universities (e.g. Centro Boliviano de Estudios Multidisciplinarios, Commonwealth Universities Extension and Engagement Network, Imagining America, Campus Compact, Global Alliance of Community Engaged Research, Global Universities Network for Innovation, Global Universities Partnership for Environment and Sustainability (GUPES) – Box 15, PASCAL International Observatory, Participatory Research in Asia and the Talloires Network);
- the Transition Town movement in the United Kingdom and elsewhere;
- Centres of expertise focusing on sustainability issues, such as the earlier mentioned RCEs, in which universities are partners in a network of NGOs, CSOs, community groups, businesses, schools, etc. (Mochizuki and Fadeeva, 2008).

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 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.

Box 15. GUPES – Reorienting higher education towards sustainability (Source: UNIR, UNEP)

ProSPER.Net members have been sharing knowledge, skills, perspectives, experiences and values related to sustainability through the network interaction and joint projects, which increases the potentiality for transformations due to the mutual learning process and working together towards common goals.

The networking process enhances collaborative, transdisciplinary and cross-boundary 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 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.

Box 16. ProSPER.Net – Promotion of Sustainability in Postgraduate Education and Research Network (Source: UNIR, UN Inter-Agency Committee for the DESD, Japan)

These new forms of boundary-crossing between different sectors and forms of education and learning are not done easily and are hindered by a number of barriers (see also Chapter 6 on whole-system engagement).

The biggest barrier from an NGO viewpoint is 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. In order to overcome such communication problems, local coordinators can play a significant role (GMES, Japan).

Conclusion

Since the mid-DESD review (UNESCO, 2009a) a trend has emerged of ESD occurring in cross-boundary contexts, demonstrating that an adequate response to sustainability challenges cannot be limited to single perspectives, disciplines or ways of knowing. Multi-stakeholder learning involves a range of societal actors, representing different sectors and interests which may not at first sight seem natural partners but find each other around the common challenge of sustainability. The resulting 'boundary-crossing' opens up new possibilities for learning and can become a source of creativity and innovation. The data emphasize the possibilities and excitement that come with this hybrid learning and the formation of new partnerships and coalitions, possibly downplaying the difficulties of organizing such learning. Universities but also vocational schools, the world of work, and primary and secondary schools are important partners in these partnerships and coalitions. The types of learning (such as interdisciplinary learning, social learning and problem-based learning) that are emerging in the context of ESD seem key to facilitating boundary-crossing, creativity and innovation.

Chapter 6: Whole-system engagement

This chapter will revisit the main changes that have occurred during the DESD. It will first examine ESD's position relative to the other emerging educations most mentioned by respondents (see below), followed by ESD's role in effecting system change and/or whole-system (whole school, organization, university, company, etc.) engagement and closing with future barriers and opportunities. It deviates from previous chapters in that it offers suggestions for models or heuristics to understand ESD's evolution.

6.1 The position of ESD in relation to other educations revisited

Chapter 2 already touched on ESD's relationship with other educations. As we near the end of this review, it is useful to revisit ESD's position relative to the findings in each ESD context. Some of the excerpts in this report allude to the increased importance of CCE, consumer education, entrepreneurial education and DRR education and are perhaps illustrative:

[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).

It is more and more difficult to get resources for promoting 'wide' and perhaps 'obscure' subjects such as SD and ESD ... [which] 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 much as possible natural and positive dimensions of all activities, instead of something that you are 'obliged' to do and promote all the time (GMES, Finland).

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

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

For the time being for example, consumer education is considered an issue, as well as 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).

The future development of ESD requires ascertaining its position relative to all these emerging educations as well as older ones (such as environmental education) addressing similar concerns. Each can be interpreted narrowly to focus only on the issue that is central in its name or more broadly to emphasize interconnections with other themes with similar underlying issues and questions. A figure (Greig, Pike and Selby, 1987) depicting 'four educations in one' (development education, peace education, human rights education and environmental education) positioned the narrow interpretation of these educations on the outside periphery and the broad, more inclusive interpretation towards the centre. This demonstrated cleverly that when viewed broadly, many of these educations revolve around common themes and overlap at the core.

Twenty-five years later, Figure 7 recreates this using six educations (some old, some new) with ESD at the centre. This positioning that can only be justified when ESD itself is interpreted broadly to include all listed themes and perspectives; when ESD is interpreted narrowly, it moves to the figure's periphery. The recreated figure could also include other educations (e.g. global citizenship education, health education, biodiversity education), since respondents frequently mention biodiversity education especially as an adjectival education that will remain relevant in the years to come.



Figure 7: Positioning deep ESD at the intersection of six ESD-related educations.

6.2 Whole-system engagement and transition

Sterling (2004) distinguished four ways people and organizations can respond to the challenge of sustainability: denial ('there's no problem or the problem is exaggerated, no need for change'), 'bolt-on' ('apparently some people take this seriously and we should show we care by adding something about sustainability to what we do'), 'built-in' ('this seems important enough to integrate it in our current system') and 'a whole-system redesign' ('this is fundamental and we cannot deal with it with our existing ways of doing things, we need create a new system based on different principles').

Integrating sustainability in a whole system has already proven quite a challenge in many schools, universities and companies. Redesigning an entire system has proven even more so. Yet the data generated in the second phase of the DESD M&E demonstrate that ESD proponents strongly favour 'built-in' and 'system redesign' responses. In practice, learning processes and multi-stakeholder interactions that engage in deep change involving developing alternative values are still scarce – although there are strong indications that people within and outside ESD are drawn to profound changes requiring new forms of learning, professional development, competences and monitoring and evaluation.

In some ESD contexts, we see some attempts to fully integrate sustainability and whole-system redesign. Some examples of whole-school or whole-institution approaches to sustainability emphasize rethinking relationships, forms of engagement and interaction and decision-making structures; creating a sustainability ‘ethos’; using diversity; and establishing new forms of (youth) leadership and management which clearly go beyond environmental management and the essential reduction of ecological footprints (Box 17).

With support from the prime minister, the Ministry of Education conducted six international seminars on GNH [Gross National Happiness] in December 2009. Through the strategies derived from the seminars, the Ministry conducted five days workshops for all the 500+ principals, college directors and selected lecturers. The participants formulated the 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 the 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 (refer to: 1. School Self-Assessment 2. Guidelines for Educating for GNH in www.education.gov.bt) (GMES, Bhutan).

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 in 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.

Box 17. Eco-Schools as an example of a whole-school approach to sustainability (Source: CS, Eco-schools, FEE)

SEdA offers a comprehensive programme for leaders in education across Canada. The programme aims are 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 programme 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.

Box 18. The Sustainability and Education Academy at York University, Canada, is an example of a whole-system approach to sustainability (Source: UNESCO Chair Report, Canada)

Such whole-system redesign can be triggered by sustainability (e.g. sustainability as a catalyst for educational reform and innovation), but also by other drivers leading to a new system or organization – which as a result of its reorientation becomes more susceptible to the concern or challenge of sustainability.

The philosophy of sustainability and employment of processes contribution to student engagement have been embedded in[the school division] for over 20 years even before the term ESD was coined. The larger scale ESD movements and the work of Manitoba Education has provided division staff with new evaluative frameworks to work with, professional development opportunities and resources (CS, Canada).

As a teacher always assessing learning, I need to know that my students are engaged and have a sense of safety created by relationships, then I know there is opportunity to engage in issues related to sustainability. Once you have a group of students that are engaged, they thrive on being able to get involved in sustainability issues (CS, Canada).

Austrian scholar Clemens Mader developed a framework for understanding the components and levels involved in helping organizations transition towards sustainability. He distinguishes five core dimensions: leadership and vision, social networks, participation, education and learning, and reflexivity. Figure 8 neatly captures some of the dimensions and change processes many respondents allude to or explicitly mention. The figure works in a similar way as Figure 7 in that it is incremental: from the outside rings towards the middle, the change in the system becomes more profound and more interconnected with the other components.

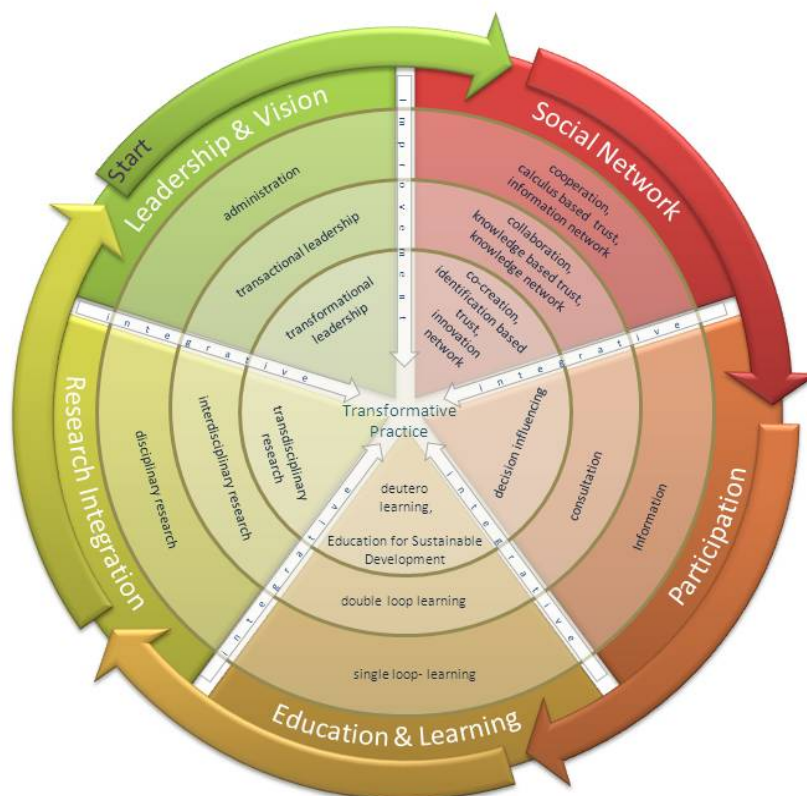


Figure 8: Components and levels of transformative performance towards sustainability. (Source: Mader, C. 2012.)²³

Figure 8 shows that for each of the distinguished dimensions of whole-system engagement in ESD, a movement is required from ‘reproductive practice’ (amplifying and reproducing what already exists) to ‘transformative practice’ (co-creating a new way of doing things). This implies a movement from single-loop learning to double-loop learning. In double-loop learning, an individual, organization or entity having attempted to achieve a goal on different occasions is able to rethink, modify or even reject the goal through critical reflection. Single-loop learning refers to repeated attempts to address the same problem without any variation in method or ever questioning the goal (Argyris and Schon, 1978). In other words, what is required is a shift towards learning that encourages a deeper understanding of underlying principles, values and interests and also allows for creating new ones.

Where participation is concerned, a movement towards the centre implies that all actors have a say in decision-making and are actively involved and, when necessary, empowered to contribute to co-creating a more sustainable new reality. In terms of social networking, it implies a movement from more strategic forms of collaboration (where involved parties participate to make sure that their own interest is best served) to collaboration driven by common innovation challenges that transcend individual interests and requiring higher levels of trust and social cohesion among the parties involved. Where leadership and vision are concerned, it entails a shift from a culture of accountability (check-in-the-box) and strategic management towards a culture of learning requiring inspirational and transformational leadership and management styles. Finally, the research and M&E components of a whole-system redesign towards sustainability require methodologies to capture whole-system change

²³ Mader, C. 2012. How to assess transformative performance towards sustainable development in higher education institutions. *Journal on Education for Sustainable Development*, Vol. 6(1), pp. 79 – 89.

and thus tend to be transdisciplinary and reflexive. Although this may appear somewhat abstract, the forms of learning highlighted in Chapters 3 and 4 (e.g. multi-stakeholder social learning, systems thinking-based learning and critical thinking-based learning) illustrate that these shifts are indeed happening.

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 building 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 lifestyles during the whole life (within and outside the schools) (CS, Spring Seeds Project, Brazil).

These shifts do nonetheless represent a major challenge for existing systems (e.g. schools and school systems) and face a number of obstacles, including participants' capacity-building and mindsets (e.g. in the case of schools and universities, teachers, students, maintenance staff and school administrators). Many respondents refer to these challenges, but also to windows of opportunity and the early signs of a change in paradigm.

The key barrier to strengthening ESD includes the change of the existing educational paradigm – from the 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 education enabling 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 mindsets 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-centred critical inquiry (CS, Thailand).

As in other country contexts in Africa, there is poor tradition of multidisciplinary teaching and research and poor experience with the ESD methodologies and approaches requiring active learning, critical questioning, systems thinking and envisioning sustainable futures. This will not be helped by a rigid timetable of an examination-driven curriculum whereby teachers and learners are fixated on rote learning and regurgitation of facts. Such a system will frustrate action-oriented projects and community-based change projects and the stimulation of learning through inquiry, guided discovery, problem solving, application and similar activity-based teaching and learning methods as stipulated in education policies (CS, Zambia).

Many respondents, national ESD journeys and country case studies highlight professional development as essential to involving staff in the shifts outlined in this chapter. Professional networks of peers facing similar challenges are often viewed as a promising means to enhance people's competence and confidence in their ESD-related efforts.

On the professional development front, participating lecturers have become more confident, committed and knowledgeable about environmental and sustainability issues (i.e. professional development has taken place). This is evidenced by the following comments from participating lecturers as captured during a previous MESA evaluation:

'So many lessons have been learned from the MESA experiences which have contributed to my professional development. Being part of the MESA formulation process provided me an opportunity to learn from experiences of academics from Africa and abroad. I have also acquired new and innovative ways of approaching my analysis of ESD issues and delivery of ESD within the local university curriculum. Moreover, I have learned about the relevance of networks and collaborative work within the academic areas of action, i.e. teaching, research and community outreach. The explanation cannot be exhausted (UNIR, UNEP).

Many of this chapter's observations echo the findings of the *Expert Review of Literature on Processes and Learning for Sustainable Development* (Tilbury, 2011). The review highlighted a number of case studies of 'whole-system engagement' and linked ESD to innovation in teaching and learning while recognizing it is not always driven by ESD and that some of the associated forms of learning existed long before ESD. It describes a number of concrete interactive methods and tools (e.g. values clarification techniques, critical incidents, debates, reflexive account, asking critically reflexive questions) that have not surfaced in this report's empirical review but have found their way in ESD-related activities. Clearly, part of the support of professional development for whole-system engagement will consist in facilitating professional networks and providing tools and methods congruent with the proposed (or suggested) paradigm shift.

Finally, exploring the dialectic between tradition and innovation is particularly salient. As it raises the question of how to maintain and preserve traditional values and still-promising ways of living in the quest for a more sustainable world, it should not be lost in our push for innovation and change.

Conclusion

At the beginning of the Decade, ESD was seen mostly as an important topic to be added to existing educational structures and contexts. In some cases, ESD competed with other adjectival educations.

While this may sometimes still be the case, there is now 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 certainly holds true for what can be called deep and inclusive ESD.

The analysis shows that ESD proponents strongly favour 'built-in' and 'system redesign' responses. During the course of the DESD a shift seems to have occurred towards a fundamental rethinking of the key principles and assumptions underlying the systems to which ESD was to be integrated or added. The introduction of 'whole-institution approaches' to ESD may have led to the realization that meaningful progress towards sustainability and its supporting education and learning can best be achieved when multiple actors engage in a whole-system redesign. This requires visionary leadership, social networking, new forms of research and high levels of participation, as well as many of the interactive, integrative and critical forms of learning that have emerged over the years in the context of ESD. At the same time, we are seeing a movement towards cross-boundary learning, whereby formal, informal and non-formal learning increasingly blur together.

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

7. The UN contribution to ESD

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

This chapter highlights the contribution of the UN system, and particularly of UNESCO, based on data provided by people within the UN system who are familiar and responsible for ESD within their own agencies.

7.1 Self-reported achievement

During the biennium, some fundamental advances in ESD have been achieved. UNESCO has helped integrate sustainability principles, values and practices in education plans and programmes, thus reinforcing the implementation of ESD at national and regional levels. A growing number of Member States are now implementing ESD policies, and the demand for policy advice on ESD is growing fast. Among other things, the strengthening of national capacities – including through the ESD Lens policy-review tool – has worked particularly well.

Box 19 lists some examples of concrete achievements, but many other examples around the world not listed here also involve a wide range and large number of actors.

- 100 RCEs, 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, mobilized to deliver ESD to local and regional communities. A network of RCEs worldwide will constitute the Global Learning Space for Sustainable Development.
- 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 on 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 also produced for educators, teachers, trainers and youth leaders around the world.
- 80 universities in 40 African countries worked together to integrate ESD in 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 environmental and sustainability concerns.
- The UNESCO-supported Global Innovation Network for Innovation (GUNi) in higher education has compiled four volumes of ESD-oriented innovation in higher education. GUNi comprise 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.
- The ESD and Teacher Education UNESCO-JFIT project consisted in the implementation of activities with an impact on 34 Member States. The main outputs of these activities were nine workshops, three network creations, one forum and six manuals and publications. These projects reached more than 3,000 people including policy-makers, teacher educators, experts, trainee teachers and journalists (Teacher Education JFIT Final Reports).

Box 19. Examples of concrete UN-supported ESD achievements (UNESCO ESD Section)

Areas of specific achievements reported by UNESCO include²⁴:

Integration of ESD

Capacity-building initiatives in many countries around the world have led to marked improvement in the capacity of planners and administrators to integrate ESD in national/local education policies, teacher education programmes and school activities. The national journey case studies and the ESD Lens tool (available in English, French, Spanish, Russian, Chinese, Arabic and Vietnamese) have been well received by stakeholders and form a good basis for UNESCO's policy review activities in ESD.

ESD in practice

ESD partnerships (among others in CC education and biodiversity) have been strengthened, including through the UNESCO Associated Schools (ASPnet) collection of good practices, ASPnet school-based activities and the celebration of the International Year of Biodiversity 2010 and the International Year of Forests 2011. The sharing of information, experience and best practices on ESD implementation relative to DRR, CC, biodiversity and green economy projects has also enhanced the capacities of policymakers and practitioners.

Climate change education and DRR

CCE in the context of ESD has continued to develop into a strong focus of UNESCO's work in ESD. UNESCO is now well positioned to implement a major programme also including education for DRR. A number of high-quality UNESCO materials for CCE in the context of ESD are being made available for decision-makers and practitioners.

Moving towards green societies

As economies move towards a more sustainable model, greening TVET is becoming an increasingly important field. Related activities can show the potential and benefits of ESD in a particularly immediate way by providing the practical skills required to reorient production processes. UNESCO jointly with UNEVOC is well positioned to provide concepts and practical examples in this field.

7.2 Intersectoral cooperation for the DESD

UNESCO has developed its own action plan providing strategic focus to initiatives that integrate ESD with related dimensions of UNESCO's activities. The goal is to help Member States and other partners integrate SD issues and practices into education systems at all levels, thus providing a basis for a more sustainable human society.

The action plan features nine intersectoral 'thematic programmes' focusing on creating the enabling environment and capacity necessary to achieve the DESD's objectives (e.g. 'education for sustainable water management' and 'education for sustainable ecosystems and livelihoods').

Based on UNESCO self-reporting, the major outcomes of these thematic programmes are:

- innovative and effective practice in the various aspects and thrusts of ESD to improve the quality of education, researched and documented;
- 'briefing papers' of good practices and annotated lists of related key resources and manuals, developed;
- guidelines, training manuals prepared for enhancing capacities in sharing of experience, knowledge management and scaling up of good practices;

²⁴ It must be emphasized that these are self-reported achievements based on the UNESCO ESD section's own analysis.

- capacities developed at least for three levels – (i) senior education decision-makers and planners, (ii) curriculum and syllabus development officers and (iii) teacher education institutions and providers of continuing professional development;
- processes put in place for monitoring, evaluation and continuous quality improvement;
- networks strengthened at regional and international levels to provide ongoing support and advice; and
- innovations and demonstration projects carried out through ASPnet, UNESCO Chairs and UNITWIN and other networks.

7.3 Future challenges

UNESCO's specific comparative advantage on the ground is its ability to link the implementation of concrete activities with upstream policy change driven by country demand and focusing on building institutional capacity that is monitored and evaluated. UNESCO also has a large convening capacity and an expansive field network to support ESD in all the UNESCO regions. A continuing task in years to come will be to communicate ESD's potential to contribute to quality education and make education systems responsive to SD challenges – which will prove easier when the evidence base for ESD benefits grows stronger. Further, the link between ESD and other items on national education and development agendas should be more clearly established (including through promoting partnerships among the different stakeholders at country level) to increase the likelihood of its mainstreaming.

IAC has also noted effective changes in processes and strategies for partnering with organizations to promote and advance ESD. As for UNEP, it recently collected ESD-related lessons learned and recommendations common to UN agencies involved in ESD. The eight challenges that reflect the current direction of ESD are as follows:

1. *The need to build on existing structures, programmes, processes and research experience*

Working with universities to reorient education to address sustainability as a *facilitator, coordinator* and *funder* highlighted the extreme importance of building on existing structures, programmes, processes and research experiences. This has particularly been helpful in Africa, where the MESA initiative drew from the environmental education work, expertise, processes and research experiences of some leading universities in the field of EE in Africa (Ogbuigwe, 2010). The *Education for Sustainable Development Innovations Toolkit; Programmes for Universities in Africa* serves as a key resource for training university lecturers on reorienting higher education to address sustainability. The MESA ESD toolkit also built on experiences of the Southern African Development Community Regional Environmental Education Programme (SADC-REEP), including the work of the Course Development Network and Rhodes University Environmental Education and Sustainability Unit. The core writing team also comprised university professors from various African universities with several years of engagement and scholarship in EE.

The UNEP-led Global Universities Partnership on Environment and Sustainability (GUPES) was developed to support infusing environmental 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 SD – which underpins GUPES – involves a *transformative learning process* and new ways of thinking about teaching, research and community engagement.

Education for sustainable consumption (ESC) was developed in the framework of the Marrakech Task Force on ESC supported by UNEP, the Italian Ministry for the Environment, Land and Sea, UNESCO and other key partners such as PERL, and local implementation partners in the three pilot countries: Chile, Indonesia, and Tanzania. The task force developed a series of generic recommendations and guidelines on ESC targeted at policymakers and educators presented in *Here and Now! ESC*

Recommendations and Guidelines, available in English, Spanish and Chinese and currently being adapted to the national contexts, priorities and needs of the pilot countries.

2. The need for participatory processes as opposed to a prescriptive approach

The MESA and GUPES experiences show that addressing sustainability by mainstreaming environment and sustainability concerns into higher education for SD cannot be achieved through a prescriptive approach. Instead, it requires a participatory process of co-defining what can or ought to be mainstreamed and how to do it in different contexts. Currently, the International Training Programme (ITP) for ESD in higher education supported by the Swedish International Development cooperation Agency (Sida) trains lecturers from several universities (mainly in Africa and Asia), who are then expected to initiate transformative change projects in their respective faculties.

3. The need for integrated and holistic conception and approaches to SD

SD entails three interrelated pillars of environment, society and economy. It is paramount that all three – and their interrelationships – receive due consideration in any SD discourse. However, our experience with higher education has revealed a tendency to highlight or prioritize certain pillars without duly exploring the linkages, influences and relationships among the environment, economy and societal pillars. This can be attributed to the backgrounds of the professionals involved. In retrospect, we highly recommend enhancing the normative framework for a more integrated approach to SD delivery. This, in turn, will ensure a holistic approach to reorienting higher education to address sustainability. Starting points may include formulating SD to harmonize social, environmental and economic objectives. It may be more fruitful to adopt a triple-helix approach (as opposed to a three-pillar approach).

4. The need for recognition of diverse contexts

Sustainability is a function of various environmental, economic, and societal factors determined by complex and diverse issues that arise in a range of contexts in different regions of the world. Therefore, initiatives to reorient higher education towards sustainability need to take into account the diverse contexts in which they are implemented.

5. The need for responsiveness

Given the complexity of sustainability and environmental issues, UNEP's EETU recognizes the value and need for responsiveness in its programmes and activities. It has learned to be conscious of regional needs and differences to respond effectively to changing contexts and needs through higher education for SD.

6. The need to pay equal attention to both processes and products

While results-based management processes come with the temptation to focus on tangible and easily measurable products, UNEP's EETU recognizes that underlying processes are often more important in trying to reorient higher education to address SD – informed by the fact that developing applied competence for SD requires developing appropriate skills through continuous and sustained contextual learning processes. This needs to be supported with the necessary knowledge and inculcation of appropriate values. The MESA innovations and ITP programme change projects made it abundantly clear that the learning processes participants undergo over time have yielded more sustainable results, which can be replicated in several other contexts.

7. The need for continuous monitoring, evaluation, research and flexibility

M&E and research have a range of purposes, including control, understanding, critique and change. However, efforts to reorient higher education to address sustainability within UNEP's MESA and GUPES partnership initiatives demonstrated that they only have value when used to improve the quality of processes and products. On the other hand, an imbedded reflexive approach helps to build in

ways of continuously reviewing past actions and learning in order to enable better, more meaningful and transformative processes to achieve the same goal. Additionally, reflexivity needs to be understood as a process of critical and contextual review and action through which actors and other stakeholders in the reorientation process work together to understand and work towards improving the processes and outcomes of reorienting higher education to address SD.

8. The need for currency and up-to-datedness with emerging paradigms and concepts in the sustainability discourse

Reorienting higher education to address sustainability means taking into account changing times and contexts. Our experiences have shown that keeping up-to-date and current with emerging SD paradigms and concepts is critical if one is to remain relevant. For instance, it may be useful to incorporate emerging paradigms such as the much-touted 'green economy' in the context of poverty and poverty eradication in discourses on higher education for SD, thus ensuring the relevance and responsiveness of related efforts. The excerpt below from UN Habitat's response to the IAC survey echoes UNEP'S point in its response to the same survey.

There is huge demand or gap in knowledge, skills and attitude among the professionals and practitioners and leaders, and yet the increasing challenges of SD and the complexity in the urban setting require them to think differently, and act smartly and decisively. Not only do they need to upgrade their knowledge and skills, but more importantly adopt a new way of thinking and development lens that would allow them to see connections between the different parts of sustainability and identify and implement context specific solutions. The arguments for transitioning to a green economy and retrofitting cities imply a huge capacity-development effort and investment outside formal education (UNIR, UN Habitat).

The last UNECE evaluation (UNECE, 2011) of ESD strategy implementation covering a large number of countries from Europe, North America and Western Asia identified challenges which are also relevant here. The report notes a continued call for 'evidence' that ESD works in terms of changing learning behaviour, lifestyles and the way institutions and business organizations work. *It calls for continued attention to developing appropriate monitoring, evaluation and indicator schemes and support of related ESD research.* It concludes that when such schemes are in place and evidence becomes available that ESD does indeed lead to more sustainable ways of living, working and doing business, ESD can be propelled even further.

The UNECE evaluation echoes some of the trends outlined in this report when it states that ESD is increasingly addressed in formal, non-formal and informal learning through whole-school approaches, workplace learning, sustainability-oriented community events, new network formation, etc. But it also notes that ESD activities in schools – while on the rise – are still sporadic and do not usually move beyond the grass-roots level to affect and inspire people in other contexts. Hence it calls for more synergy, networking and coordination to upscale ESD from the margins to the mainstream.

Finally, the UNECE evaluation also notes that many of the reported ESD initiatives are 'cross-boundary', blending formal, informal and non-formal learning and often involving multiple actors, groups, organizations and networks. It suggests that this phenomenon poses new challenges for ESD facilitators, who will have to play an important role mediating, linking and catalysing these cross-boundary ESD learning configurations.

Conclusions

ESD is far more part of the discourse and of project implementation within the UN system than it was two years ago. ESD is becoming the norm rather than an outlying concept. The challenges raised in this chapter reaffirm this review's earlier findings suggesting a paradigm shift towards more

intersectoral, cross-boundary and participatory forms of engagement. The various agencies within the UN system see a role for ESD in responding to emerging themes and issues (e.g. the green economy, CC, DRR, integral water management and sustainable resource governance). This poses the question of capacity-building for new forms of learning and supporting stakeholders' cross-boundary arrangements: To what extent are people within the UN system working on these themes and issues and advocating for ESD and intersectoral and interactive responses able to support and facilitate transitions towards a green economy, resilient communities and integral approaches to natural resource management and governance (all of which suggest a shift in paradigm)? There is on question that the people representing the various UN Agencies in the IAC display a thorough understanding of the deep ESD mentioned in the previous chapter.

Chapter 8: Key conclusions and ways forward

This report describes the learning processes taking place in the various ESD contexts (early childhood, primary and secondary education, vocational education and the private sector, higher education and non-formal education). The review is based on Phase II of the GMEF framework of the DESD, which comprises a literature review of learning processes in the context of ESD (Tilbury, 2011) and an analysis and review of responses to a Global Monitoring and Evaluation Survey (GMES) provided by key ESD informants from 102 countries; 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 input from the UNESCO ESD Chairs. Combined, the literature review and this report add to the evidence base for ESD and associated educations concerned with people and the planet. As such, it will become an internationally recognized learning mechanism helping schools, universities, communities, and organizations critically and innovatively engage with the challenge of sustainability and SD. This summary comprises twelve key findings in this report.

8.1 General findings

1. The 'E' in ESD is conceptualized in different ways depending on the amount of space available for participation, self-determination and autonomous thinking. Local conditions vary in this respect around the globe, leading to different interpretations and modes of ESD. When this space is narrow, more transmission-oriented modes of ESD are likely to result with a strong emphasis on instructional forms of teaching and knowledge transfer. When this space is broad, ESD characterized by higher levels of participation, self-determination, autonomous thinking and knowledge co-creation emerges. The latter versions of ESD require alternative forms of teaching and learning and stakeholder interaction.
2. ESD is increasingly seen as a means to renew education, teaching and learning in ways that allow schools, universities, VET institutes, communities and businesses to deal with the challenges posed by sustainability and SD – the nature of which demands educational responses that enable learning to deal with change, complexity, controversy, uncertainty and values. As a result, a wide range of approaches to learning – some old, some new – are currently employed in the context of 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 ESD is causing a co-evolution of pedagogy and has arguably become a catalyst for educational change and innovation. Although the evidence base for this phenomenon is still weak and its scale quite limited, the discourse within ESD circles has shifted from ESD as something to add-on to education and learning to ESD as a mechanism for rethinking education and learning.
3. Whereas the emphasis earlier in the Decade was on finding a niche among educations, ESD is seen today as a potential umbrella for educations (including environmental education, global citizenship education and the more recent consumer education, CC education and education for DRR) concerned with the well-being of the planet and its inhabitants. Given the undeniable continued societal concern about sustainability and SD, ESD appears well positioned to play a synergistic role among educations with a core focus on related issues and questions. Rather than push for ESD as an 'add-on' subject to an already overcrowded curriculum, schools need to introduce ESD as a canvassing concept that can help them address sustainability challenges meaningfully through making connections and introducing appropriate forms of learning.
4. In many parts of the world the boundaries between schools, universities, communities and the private sector are blurring as a result of a number of trends, including the call for lifelong learning, globalization and ICT-mediated social networking education, the call for relevance in

higher education (and education in general) and the private sector's growing interest in human resource development. The resulting 'boundary-crossing' is reconfiguring formal, informal and non-formal learning and changing stakeholder roles and public-private relationships. This new dynamic can provide a source of energy and creativity in education, teaching and learning which in turn (when underpinned by the quest for a more sustainable and liveable world) provides a powerful entry point for ESD. The report features many examples of multi-stakeholder social learning in the context of ESD where different societal groups find and complement each other in working towards local responses to ESD and SD.

5. Interest in 'whole-institution approaches' or 'whole-system approaches' to sustainability and SD is growing. It is connected to the realization that meaningful progress towards sustainability can only be achieved by questioning existing routines and practices and the values on which they are based, and that new ones need to be created interactively. Many respondents suggest (and indeed demonstrate) this can best be achieved when multiple actors engage in a whole-system redesign. In the case of schools and universities, this involves rethinking the curriculum, campus operations, organizational culture, leadership and management, community relationships, and research and assessment. Such a redesign not only requires many of the interactive, integrative and critical forms of learning that have emerged in the context of ESD in the past few years, but also a willingness to make explicit and confront the values and interest that underlie the current system. Current global interest in transitioning towards a green economy is one particular movement that could help foster a major reorientation. As long as it is able to maintain its critical focus, ESD appears well positioned to play a key role in such a transition.
6. Young people are seen as key agents of change in moving towards a more sustainable world. They are growing up in the digital age, which engenders new connections, access to unlimited information and new possibilities for creating agency and change. Although this connectivity does not necessarily lead to sustainability – and perhaps leads even more to unsustainability – ESD cannot ignore the power of ICT-based environments and young generations' immersion therein. Although this review barely addresses this phenomenon, it seems too important to ignore. The question of how ESD can use the inevitable exposure of young people and future generations to ICTs and the resulting access to information and social networks will need to be addressed.

8.2 Context-specific findings

ESD in ECCE

7. ESD in ECCE is no longer an anomaly in ESD in formal education. Whereas early in the Decade questions were asked about the necessity of ESD for society's youngest members ('they are too young for such complex and heavy issues, let them be children and not be bothered with this'), there now is a realization that ESD has a place in ECCE. Without being heavy or complex, it can give young people a voice and help them express themselves and make sense of the world parting which they live. Again, the ECCE context varies greatly and is absent (or accessible only to privileged members of society) in many parts of the world. Its functions, staffing and the possibilities it can offer – from basic shelter and food to nurturing places that allow for discovery and development of head, heart and hands – also vary greatly. The data provided by those working in this sector show the promise of ESD in ECCE, even if it comes as no surprise that local conditions limit or increase its possibilities.

ESD in primary and secondary education

8. Despite a number of inspiring examples around the world that suggest otherwise, ESD remains marginal if considered as a separate and distinct entity and commonly understood concept in schools' everyday conversations. However, there is growing recognition that ESD

has much greater value as a source of innovation in teaching and learning than as another subject to be added to an already crowded curriculum. The data (the country case studies and national ESD journeys, but also the KIS, GMES and internal UN review) suggest that sustainability-related topics that affect a community, country or region are receiving increased attention coinciding with a call for educational innovation and strengthening school-community linkages. Whether or not these trends are causally linked, it remains that linking them can help reinforce all three simultaneously; the present review provides some evidence of this. It must also be stressed, however, that conditions and educational systems differ around the world, with some allowing for more space to deviate from standardized national curricula than others. Where there is space for some self-determination and autonomy for schools, teachers and students, the likelihood of educational innovation and cross-boundary learning within society is greater. Where this space is more limited, developing quality educational material that can be linked easily to existing curricula will remain necessary.

ESD in TVET

9. Perhaps the most visible changes relative to the inclusion of ESD can be observed in both TVET and human resource development and professional development in the world of work. Driven by mostly economic interests and technological innovations, companies are beginning to reorient themselves to what is commonly called 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 and vocational schools are responding by reorienting their curricula. From an ESD perspective, it is important to critically follow this promising trend in order to make sure that the 'P' for 'people' and the 'P' for 'planet' receive at least as much attention as the 'P' for 'profit'. The new learning arising out of the business world's newfound interest in 'greening' and 'corporate social responsibility' is competence-based: students are placed in a global context to address authentic corporate or industry sustainability challenges. Competence-based learning around real-life issues, coupled with competence-based assessment, can also be of interest to ESD in other contexts. The idea of TVET schools as agents for local SD is an interesting one, which may need to be explored further during the remainder of the DESD.

ESD in higher education

10. This review shows that colleges and universities around the world are starting to make more systemic changes towards sustainability amidst educational reforms towards efficiency, accountability, privatization, management and control that often hamper their efforts. It provides examples of IHEs becoming an ESD interface between the local and the global community – addressing local sustainability issues, but also using global tentacles and networks to take advantage of perspectives and expertise grounded in contexts elsewhere. IHEs are beginning to advance systemic thinking by examining connections, relationships and interdependencies. They are also developing and introducing new forms of learning that can help people understand and engage in SD. Alternative benchmarking and ranking systems featuring indicators of a university's contributions to sustainability are being established.

ESD in non-formal learning

11. Although virtually all respondents and case studies acknowledge that ESD in the context of non-formal learning is crucial and happening across the globe at various levels, this review generates little information on the type and possible design of learning involved and the competences required to facilitate it. Nevertheless, some trends are worth noting, such as: the increasingly vague boundaries between non-formal, informal and formal learning as schools and universities orient themselves more towards society and learning around 'real issues' in rich contexts; the growing presence of the media (particularly ICT-based media); the increased emphasis on lifelong learning; and the rise of private-sector involvement in education and

learning. It remains to be seen whether these trends – some of which are driven by economic interests rather than possibly conflicting sustainability interests – will be conducive to strengthening ESD. As for the type of learning that appears most appropriate in this ESD context, social learning, discovery learning and problem-based learning arguably have merit, but more research is required to confirm this.

ESD within the UN system

12. ESD is a far more important part of the discourse and project implementation within the UN system than two years ago. In fact, ESD is becoming the norm rather than a peripheral concept. The IAC members reaffirm this review's findings suggesting a paradigm shift towards more intersectoral, cross-boundary and participatory forms of engagement. The various UN agencies are seeing a role for ESD in responding to emerging themes and issues such as the green economy, CC, DRR, integral water management and sustainable resource governance. They also recognize that ESD represents one of many interests within the UN. Creating synergies with other 'educations' while also remaining critical of patterns and routines within and outside the UN system that support interests conflicting with the very principles a deep ESD seeks to strengthen will be crucial to ensuring its sustainability and legitimacy.

8.3 Ways forward

As the DESD approaches 2014 – its final year – supporting and further developing ESD as a catalyst for transitioning education, teaching, learning and professional development towards more holistic, integrative and critical ways of tackling sustainability issues will be paramount. This will require strengthening capacity-building for the forms of learning identified in this review: problem-based learning, multi-stakeholder social learning, interdisciplinary learning, action learning and critical thinking-based learning. It will also require a better understanding of what these capacities entail and especially which qualities and competences need to be developed to enable people and organizations to contribute to SD.

For this capacity-building and competence development to be effective, the concept of a whole-system approach affecting all actors (for example in a school system, company or production chain) will need to be promoted and supported. Facilitating emerging hybrid cross-boundary arrangements of diverse stakeholders will also be essential and possibly required as well within the UN system, national governments and other organizations supporting or engaged in ESD.

The cross-boundary nature of sustainability-oriented learning poses new challenges for facilitators of ESD in that they will have to play an important role mediating, linking and catalysing cross-boundary ESD learning configurations. Governments can support ESD educators by stimulating the creation of 'learning environments' at the societal level, creating spaces where ESD practitioners meet, learn from one another, join forces and strengthen their individual activities. Mechanisms that ensure the effective involvement in the decision-making process of stakeholders from all levels and areas of society also need to be established. Meanwhile, mapping and sharing existing practices in informal and non-formal education should be continued and expanded.

To remain relevant in the years after the Decade, ESD will need to position and develop itself as an education that can help citizens deal with complexity, controversy and uncertainty. At the same time, it will need to empower and equip them with the capacities to transform themselves and others, always keeping in mind the well-being of the planet. In this role, ESD is not competing with well-established educations such as EE or emerging ones like CCE. Rather, it supplies the methods, tools and learning processes that can strengthen all of them, while also benefiting from the lessons learned in those other types of education.

Expertise in both ESD and SD needs to be globally and openly accessible to all members of society (for instance through open-source internet-based platforms allowing scientists, community groups and individual citizens worldwide to contribute to and benefit from this new kind of research), with

established mechanisms them to contribute to the continuous advancement of SD and ESD expertise. Continued research and M&E will need to take place in the coming years to support the evidence base proving ESD's effectiveness in strengthening people's capacities to contribute to SD. As the evidence base expands, policies supporting learning-based transitions towards sustainability will very likely become stronger and more widespread. This could accelerate curriculum innovation and enable greater adoption of the learning and processes highlighted in this report.

As the world changes and new challenges and insights emerge, Member States will continuously need to recalibrate their views and visions of a sustainable society. This is not just a matter of science, but also and perhaps foremost one of learning. ESD can offer guidance in the learning required to better decide how to live and work more sustainably on a planet that – at least for the time being – will continue to grow in terms of population numbers and shrink in terms of natural resources. This recalibration requires critical reflection on some well-established mindsets, routines and values that may not be tenable from a sustainability perspective. ESD – and indeed UNESCO, other UN agencies and Member States supporting ESD – will need to continue and step up support for those learning processes that challenge, empower and enable people (young and old, living under sometimes dramatically different circumstances) to reorient systems and lifestyles towards sustainability.

References

- Argyris, C. and Schon, D. 1978. *Organizational Learning: A Theory of Action Perspective*. Reading, Mass., Addison-Wesley.
- Bird E., Richard, R. and Warwick, C. 2010. *Media as Partners in Education for Sustainable Development: A training and resource kit*. Paris, UNESCO.
- Delors, J. 1996. *Learning: the Treasure Within. Report to UNESCO of the international commission on Education for the Twenty-first Century*. Paris, UNESCO
- Gadotti, M. 2008. What We Need to Learn to Save the Planet. *Journal of Education for Sustainable Development*, Vol. 2(1), pp. 21–30.
- . 2009. *Education for Sustainability. A Contribution to the Decade of Education for Sustainable Development*. São Paulo, Editora e Livraria Instituto Paulo Freire.
- Gendong, S. (ed). 2010. *Advance the Construction of High-Quality Schools in Basic Education by Education for Sustainable Development*. [Project report]. Beijing, Chinese National Working Committee for ESD.
- Greig, S. Pike, G. and Selby, D. 1987. *Earthrights: Education as if the Planet Really Mattered*. London, Kogan Page/World Wildlife Fund.
- GUNi. 2011. *Higher Education's Commitment to Sustainability: from Understanding to Action*. Basingstoke, UK, Palgrave/Macmillan. ([Global University Network for Innovation \(GUNi\) Series on the Social Commitment of Universities](#), Higher Education in the World Part 4)
- Holmberg, J. et al. 2008. Specific recommendations on integrating ESD in higher education. Ottosson, P. and Samuelsson, B. (eds), *The Gothenburg Recommendations on Education for Sustainable Development. Adopted November 12, 2008*. <http://www.desd.org/Gothenburgl%20Recommendations.pdf>
- Jickling, B. and A. E. J. Wals. 2008. Globalization and environmental education: looking beyond sustainable development. *Journal for Curriculum Studies*, Vol. 40(1), pp. 8–11.
- Mader, C. 2012. How to assess transformative performance towards sustainable development in higher education institutions. *Journal on Education for Sustainable Development*, Vol. 6 (1), pp. 79-89.
- Mehlmann, M., McLaren, N. and Pometun, O. 2010. Learning to live sustainably. *Global Environmental Research*, Vol. 14, pp. 177–186.
- Michelsen, G. and Adomssent, M. 2007. Education for Sustainable Development Strategies in German Universities. A. E. J. Wals (ed), *From Cosmetic Reform to Meaningful Integration: Implementing Education for Sustainable Development in Higher Education Institutes – the state of affairs in six European countries*. Amsterdam, DHO.
- Mochizuki, Y. and Fadeeva, Z. 2008. Regional centres of expertise on education for sustainable development: an overview. *International Journal of Sustainability in Higher Education*, Vol. 9(4), pp. 369–381.
- Ogbuigwe, A. 2010. UNEP's work to implement good practice at a regional level: contribution to the UNDESD. *International Review of Education*, Vol. 56 (2), pp. 353–372. Doi: 10.1007/s11159–010–9167–7. (Haan, G., Borman, I. and Leicht, A., eds, *The Midway Point of the UN Decade of Education for Sustainable Development: Where Do We Stand?* special issue.)

- Peters, S. and Wals, A. E. J. 2012. Learning and knowing in pursuit of sustainability: Concepts and tools for trans-disciplinary environmental research. Krasny, M. and Dillon, J. (eds), *Trans-Disciplinary Environmental Education Research*. London, Taylor & Francis.
- Selby, D. 2010. 'Go, Go, Go, said the bird': Sustainability-related education in interesting times. Kagawa, F. and Selby, D. (eds), *Education and Climate Change: Living and Learning in Interesting Times*. New York, Routledge.
- Sterling, S. 2004. Higher education, sustainability, and the role of systemic learning. Corcoran, P. B. and Wals, A. E. J. (eds), *Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice*. Dordrecht, Kluwer Academic Press.
- Thaman, K. H. and Thaman, R. R. 2009. Pacific Island principles: learning to live wise and sustainable lives. P. B. Corcoran and P. M. Osano (eds). *Young People, Education, and Sustainable Development*. Wageningen Academic Publishers, pp. 63–75.
- Sleurs, W. (ed). 2008. *Competencies for ESD (Education for Sustainable Development) teachers. A framework to integrate ESD in the curriculum of teacher training institutes*. Comenius 2.1 project 118277-CP-1-2004-BE-Comenius-C 2.1.
- Tilbury, D. 2009. Tracking our progress: a global monitoring and evaluation framework for the UN DESD. *Journal of Education for Sustainable Development – July/December 2009*, Vol. 3, No. 2, pp. 189–193
- . 2011. *Education for Sustainable Development: An Expert Review on Processes and Learning for ESD*. Paris, UNESCO. <http://unesdoc.unesco.org/images/0019/001914/191442e.pdf>
- UNECE. 2011. *Learning from each other: achievements, challenges and ways forward – Second evaluation report of the implementation of the UNECE ESD Strategy*. Geneva, UNECE. http://www.unece.org/fileadmin/DAM/env/esd/6thMeetSC/Informal%20Documents/PhaseIIProgressReport_IP.8.pdf
- UNEP. 2008. *Mainstreaming Environment and Sustainability in African Universities Partnership: Supporting Universities to Respond to Environment, Sustainable Development and Climate Change Challenges. 2004–2008 Report*. Nairobi, UNON.
- . 2011. *Visions for Change: Recommendations for Effective Policies on Sustainable Lifestyles*. Nairobi, UNEP.
- UNESCO. 2005. International Implementation Scheme (IIS) for the DESD. Paris, UNESCO. <http://unesdoc.unesco.org/images/0014/001486/148654e.pdf>
- . 2007a. *The UN Decade of Education for Sustainable Development (DESD 2005–2014): the first two years*. Paris, UNESCO
- . 2007b. *Drivers and Barriers for Implementing Learning for Sustainable Development in Pre-School through Upper Secondary and Teacher Education, Goteborg Workshop from 27th to 29th March 2006*. Paris, UNESCO
- UNESCO. 2009a. *Review of Contexts and Structures for ESD* (by Wals, A. E. J.). Paris, UNESCO.
- . 2009b. *Bonn Declaration. UNESCO World Conference on Education for Sustainable Development, 31 March – 2 April 2009*. Bonn, UNESCO. http://www.esd-world-conference-2009.org/fileadmin/download/ESD2009_BonnDeclaration080409.pdf
- . 2011. *National Journeys towards Education for Sustainable Development 2011*. Paris, UNESCO

—. 2012 (Forthcoming). *National Journeys towards Education for Sustainable Development 2012*. Paris, UNESCO.

UNESCOCAT. 2007. *Faith-Based Organizations and Education for Sustainability. Report of the International Experts' workshop held in Barcelona from 22nd to 24th March 2007*. www.arcworld.org/downloads/Barcelona%20Report.pdf

UNESCO–UNEVOC. 2004. *Learning for Work, Citizenship, and Sustainability: the Bonn Declaration*. Paris and Bonn, UNESCO. http://www.unevoc.unesco.org/fileadmin/user_upload/pubs/SD_BonnDeclaration_e.pdf

Wals, A. E. J. 2009. A mid-decade review of the Decade of Education for Sustainable Development. *Journal of Education for Sustainable Development*, Vol. 3(2), pp. 195–204.

Wals, A.E.J. and Blewitt, J. 2010. Third-wave sustainability in higher education: some (inter)national trends and developments. Jones, P., Selby, D., and Sterling, S. (ed.) *Sustainability Education: Perspectives and practice across higher education*. London: Earthscan, p. 55-74.

Wals, A. E. J and Schwarzin, L. 2012. Fostering organizational sustainability through dialogical interaction. *The Learning Organization*, Vol. 19 (1), pp. 11–27.

Worldwatch. 2011. *State of the World 2011: Innovations that Nourish the Planet*. Washington DC, Worldwatch Institute.

———. 2012. *State of the World 2012: Moving Toward Sustainable Prosperity*. Washington DC, Worldwatch Institute.

APPENDIX 1 – Data Sources

Respondents to surveys of Member States

Country	Email ²⁵ Survey	GMES		Country	Email Survey	GMES
AFRICA				ARAB STATES		
Benin				Algeria	X	X
Botswana	X			Bahrain	X	
Burundi		X		Egypt		X
Cameroon	X			Iraq	X	
Cape Verde	X			Jordan	X	X
Chad		X		Kuwait	X	X
Congo		X		Lebanon	X	X
Gambia		X		Mauritania	X	
Guinea		X		Oman	X	X
Madagascar	X			Palestine		X
Mali	X	X		Qatar		X
Namibia		X		Sudan		X
Niger		X		Syrian Arab Republic	X	
Nigeria		X		Tunisia		X
Seychelles	X			United Arab Emirates	X	
Sudan		X				
Togo		X				
Uganda		X				
Zambia		X				
Zimbabwe	X	X				

²⁵ An email survey sent to UNESCO National Commissions and Permanent Delegations in April 2011.

Country	Email Survey	GMES		Country	Email Survey	GMES
ASIA PACIFIC				EUROPE AND NORTH AMERICA		
Afghanistan	X	X		Armenia		X
Australia	X			Austria	X	X
Bangladesh		X		Belgium	X	
Bhutan		X		Bosnia and Herzegovina	X	X
China	X	X		Bulgaria		X
Fiji	X	X		Croatia		X
Indonesia	X			Cyprus	X	
Japan		X		Denmark		X
Republic of Korea	X	X		Estonia	X	
Lao People's Democratic Republic	X			Finland		X
Maldives		X		Former Yugoslav Republic of Macedonia		X
Mongolia		X		France		X
Myanmar		X		Georgia	X	
Nepal		X		Germany	X	X
New Zealand		X		Hungary	X	
Pakistan		X		Italy	X	X
Philippines	X	X		Kazakhstan		X
Sri Lanka		X		Latvia	X	X
Thailand		X		Lithuania	X	
Tonga		X		Malta	X	X
Timor-Leste		X		Monaco	X	
				Montenegro		X
				Netherlands	X	X

Country	Email Survey	GMES		Country	Email Survey	GMES
EUROPE AND NORTH AMERICA				LATIN AMERICA AND THE CARIBBEAN		
Norway		X		Antigua and Barbuda		X
Poland	X	X		Argentina	X	X
Slovenia	X			Bahamas		X
Spain		X		Brazil		X
Sweden	X	X		British Virgin Islands		X
Switzerland		X		Chile	X	X
Uzbekistan	X			Colombia	X	X
United Kingdom		X		Costa Rica		X
United States		X		Cuba	X	X
				Dominican Republic	X	X
				Ecuador		X
				Guatemala		X
				Guyana		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

Respondents to 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 Needs Education – University of Buea	Cameroon
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
OKKA Foundation	Finland
Institut EDIG Université de Bordeaux 3	France
Solidarité Laïque	France
Leuphana University of Luneburg (2)	Germany
Fair Trade Hellas	Greece
UNESCO Chair on ICT in Education for Sustainable Development – University of Crete	Greece
Centre for Environment Education (CEE)	India
Eco-Schools 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
Coordinación Universitaria para la Sustentabilidad – Universidad Veracruzana	Mexico
Instituto de Investigaciones en Educación – Universidad Veracruzana	Mexico
Universidad Veracruzana – Vicerrectoria Región Veracruz	Mexico

OPEN Universiteit (OUNL)	Netherlands
PERL –Partnership for Education and Research about Responsible Living	Norway
UNESCO Chair on Ecologically Safe Development of Large Regions – The Volga Basin of the Nizhny Novgorod State University	Russian Federation
Drustvo Humanitas	Slovenia
Peermariteburg	South Africa
Universidad Nacional de Educación a Distancia. Cátedra UNESCO de Educación Ambiental y Desarrollo Sostenible	Spain
Global Action Plan International	Sweden
OMEP International	Sweden
SWEDES – 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 UN internal review of ESD survey *

UNESCO International Bureau of Education (IBE)
UNESCO Office in San José
UNESCO Office in Havana
UNESCO Office in Beirut
UNESCO Office in Windhoek
UNESCO Office in Harare
UNESCO Office in Apia
UNESCO Office in Santiago de Chile
UNESCO Office in Almaty
UNESCO Office in Venice
UNESCO Office in Yaounde
UNESCO Office in Addis Ababa
UNESCO Office in Kingston
UNESCO Office in Beijing
UNESCO Office in Doha (2)
UNESCO SC/HYC/UWS
UNICEF
UNEP
UNU–IAS Japan (3)

* IAC members participating in a Monitoring and Evaluation focus group discussion included UNICEF, FAO, UNEP, UNECE, UNU, UNESCO, UNCCD, UNCBD and UN Habitat.

National Journeys: Towards Education for Sustainable Development

Review of national experiences from:

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

APPENDIX 2 - Acronyms

3Ps	People, Prosperity and Planet
APEX	Accelerated Programme for Excellence
CCE	Climate Change Education
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–ESD	Environment, Population and Sustainable Development for Education
ESC	Education for Sustainable Consumption
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	International Bureau of Education
IAC	United Nations Inter-Agency Committee
ICT	Information and Communication Technology
IHE	Institute of Higher Education
IIS	International Implementation Scheme
IJSHE	International Journal of Sustainability in Higher Education
ILO	International Labour Organization
ISCED	International Standard Classification of Education
ITP	International Training Programme
IWG/ESD	Intersectoral Working Group on ESD
JFIT/ESD	Japanese Funds-In-Trust on Education for Sustainable Development
KIS	Key Informant Survey
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MESA	Mainstreaming Environment and Sustainability in Africa
MEEG	Monitoring and Evaluation Expert Group
NEPA	National Environment and Planning Agency
NESDJ	National ESD Journeys
NGO	Non-Governmental Organization
NJESD	New Jobs through Environmental Sustainable Development
NOAA/USCRP	National Oceanic and Atmospheric Administration / United States Consolidated Rehabilitation Programme
OMEP	Organisation Mondiale pour l'Éducation Préscolaire
PERL	Partnership for Education and Research about Responsible Living
RCE	Regional Centre of Expertise
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 Education, 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
RCE	Regional Centres of Expertise
SD	Sustainable Development
SEES	School of Environmental and Earth Sciences
SIDA	Swedish International Development cooperation Agency
SNCAE	Sistema Nacional de Certificación Ambiental de Establecimientos Educativos
VET	Vocational Education and Training

APPENDIX 3 - Monitoring & Evaluation Expert Group (MEEG) members

Name	Title/institution/country	Website
BRENES, Abelardo	Special advisor, Earth Charter International Costa Rica	http://www.earthcharter.org
GOVINDA, Rangachar	Senior fellow and head, school and non-formal education unit National University of Educational Planning and Administration India	http://www.nuepa.org
MICHALOS, Alex	Director, Institute for Social Research and Evaluation Professor emeritus of political science University of Northern British Columbia, Canada	http://www.rsc.ca
NAGATA, Yoshiyuki	Associate professor, University of the Sacred Heart, Tokyo, Japan	http://www.u-sacred-heart.ac.jp/nagata/index.html
RAAIJ van Roel	National coordinator Senior officer, strategy and information Secretary of the national steering committee on Learning for Sustainable Development Ministry of Agriculture, Nature and Food Equality, Netherlands	http://www9.minlnv.nl/
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	http://www.usp.ac.fj/
TILBURY, Daniella (Chair)	Professor of sustainability Director of academic and corporate affairs (sustainability), University of Gloucestershire, United Kingdom	http://www.glos.ac.uk/vision/sustainability/
VARCHER, Pierre	Member, Swiss National Commission for UNESCO (2004–2007) Switzerland	http://www.unesco.ch/
VASCONCELOS, Alcyone	Programme specialist in education UNESCO Institute for Statistics (UIS) Canada	http://uis.unesco.org

The 2012 Full-length Report on the UN Decade of Education for Sustainable Development 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 UN Decade of Education for Sustainable Development? 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.

.