Preface

ESD Promises and Challenges: Increasing its Relevance

Introduction

The expression "education for sustainable development" denotes a complex of concepts, theoretical constructs, policy prescripts and practical methods and tools connecting education and learning to the social, economic and ecological dimensions of sustainable development in their dynamic interaction. Education for sustainable development (ESD) is about how – through education and learning – individuals, groups, organizations and communities, locally, nationally, regionally and globally, can move towards a greater sustainability of their social, cultural and economic practices, relations, institutions and arrangements.

The purpose of the eleven articles in this special issue of Global Environmental Research is to give a glimpse into where the policy debate about ESD stands and how it might proceed as well as how in a variety of settings ESD is being practiced and thus ESD's distinctive features are being operationalized and defined.

In this Preface we introduce the reader to the world of ESD which, at times, can seem impenetrable because of its complexity, its manifold manifestations and its language. First, we give the context of the various articles. They refer to the conceptualization, the policies and practices of ESD at various levels, whether international, regional, national or local. They deal with education and instruction as well as individual and social learning. They relate to ESD in formal settings (*e.g.*, classrooms and schools), non-formal settings (*e.g.* nature reserves) or informal settings (*e.g.*, community development). And, they deal more or less explicitly with issues of environment and ecology, economic, social and cultural development, as well as transition and transformation. Subsequently, we briefly introduce each of the eleven articles separately. Close reading of the articles leads us in the last section of this Preface to present a set of observations with relevance to the theory, policy, research and practice of ESD.

ESD Manifestations

As a way of setting the stage and in order to capture the richness of what diverse groups and communities around the world "do" as ESD practice, we invite the reader to consider five manifestations of ESD: at the local level, at the level of countries and geographical regions, at the international level and in the interplay between different levels.

Education, learning and action at the grassroots or community level

Growing numbers of local communities are being confronted by the combined challenges of deteriorating natural resources, climate change, population transitions, economic transformations and cultural change. They have to find appropriate balances and trade-offs between cultural, social, economic and environmental necessities, demands and aspirations. Some Japanese examples presented in this issue show how a variety of local stakeholders have discovered ways of using natural processes and ecosystem services to boost quality rice production, restore wetlands, and improve biodiversity and water quantity and quality, while eliminating pesticides and revitalizing the regional economy. They also show how school-based education and a great variety of non-formal and informal (social) learning facilitated the underlying processes of discovery and action. Another example from this special issue is the case of the public health system of Kerala, India. It demonstrates the importance of local cultural traditions and practices that could form a basis of culturally appropriate pedagogies. Their integration into formal and informal learning practices leads to significant improvements in sustainability practices.

National policies and schemes

Subsequent to the Earth Summit (Rio 1992) and the World Summit on Sustainable Development (Johannesburg 2002) and in accordance with the UN Decade of Education for Sustainable Development (DESD), a number of

national governments have taken the necessary measures to integrate ESD elements in national educational policies and curricula related to formal education. The Japanese policy to increase the number of schools joining UNESCO's Associated Schools Project Network (ASPnet) to 500 in the country by 2014 is an interesting example thereof. Another example is Kenya's National ESD Strategy. Aiming at ESD integration across all sectors, Kenya developed seven interlinked ESD implementation strategies, including the establishment of Regional Centres of Expertise (RCEs) for promoting ESD practice in formal, non-formal and informal learning settings.

Regional policy development

Some years ago, the United Nations Economic Commission for Europe (UNECE), concerned about how ESD would unfold in formal education and non-formal learning settings, asked an international group of experts to operationalize the complexity of the ESD concept, with particular reference to the central role of the educators (UNECE, 2009). Recently the Expert Group has formulated "ESD competencies" for educators and recommendations for policy makers for developing these competencies. These are expected to be used by countries and agencies to shape the training of educators and thus exert an "ESD" influence on actual teaching and learning practice.

Another example of regional policy development is "The Association of Southeast Asian Nations (ASEAN) Environmental Education Action Plan 2008-2012," a collaborative framework developed for addressing Environmental Education (EE) and ESD in the ASEAN countries. It focuses on four areas: the formal sector, the non-formal sector, human resource capacity building and networking, and collaboration and communication. The plan contains a variety of actions, including an ASEAN eco-school network, capacity development for ASEAN leaders working with ESD and sustainable development (SD), and a special ESD program for youth.

International policy development

As mentioned before, the UN DESD (2005-2014) is the most important international platform at which ESD policy and practice are presented, shared, debated, assessed and further developed. The DESD, operating under UNESCO's auspices, was a direct result of the 2002 Johannesburg Summit. The Decade and its mid-term World Conference on ESD in Bonn (2009) and the end-of-decade conference to be held in Japan (2014) are an example of how international momentum is being maintained to promote ESD and to make it a compelling idea across the world. The DESD provides for the liaison with the educational, learning and communication aspects of other international conventions and schemes that have immediate relevance to the earth's sustainability and humanity's sustainable development, such as Article Six of the UN Framework Convention on Climate Change (UNFCCC), the Communication, Education and Public Awareness (CEPA) Work Programme of the Convention on Biological Diversity (CBD), the UN Decade on Biodiversity (2011-2020), the Marrakech Process and its Framework Programme on Sustainable Consumption and Production, the UN International Strategy for Disaster Reduction, the UN Convention against Corruption, and multiple conventions and agreements on human rights.

Across local, regional and global levels

The challenges facing humanity, whether related to climate change, rising food prices or financial and economic turmoil, are global; while much of their manifestation is local. Learning about these challenges and creating appropriate responses can therefore not be confined to either the local or the global level, exclusively. Local understanding and action must inform global understanding and action and vice versa. This reality has been the stimulus to bring together the rich insights, practice and expertise in ESD across local, national, regional and international institutions with the Regional Centre of Expertise on ESD (RCE) initiative. Individual RCEs are networks of local/regional organizations with joint strategies to implement DESD goals in the regions where they operate. By December 2010, 85 multi-stakeholder networks spreading across Africa, Asia, Europe and the Americas have been acknowledged as RCEs by the United Nations University. RCEs are engaged in collaborative research, capacity development, policy and operational activities across the continents and globally. In this special issue, OFEI-MANU & SHIMANO refer to the Greater Sendai RCE (Japan) and TAYLOR to the KwaZulu Natal RCE (South Africa).

ESD, the Concept

ESD is not a fixed entity. It has many predecessors, both in theory and in practice. Especially since the Johannesburg Summit (2002) and the launch of the DESD in 2005, both the concept and the practice ESD have been promoted worldwide. ESD cannot be equated with one particular and codified educational or instructional method or practice, such as "discovery learning" or "experiential learning," nor with "environmental studies" or "social studies" for that matter. ESD can be associated with but is certainly not the same as "climate change education," "disaster preparedness education" or "community development." ESD includes and encompasses any of these practices and approaches, and more, as illustrated by the articles in this special issue. ESD does not represent particular pedagogies, whether "Dalton," "Dewey," "Freire," "Montessori" or "Steiner," or "humanistic," "Buddhist," "Christian," "Jewish" or "Islamic" teachings. It embraces some of their basic tenets. ESD goes beyond mere socialization, knowledge transmission, skills learning or awareness-raising. It invites the learners to engage as actors – individually and collectively – in the realities and challenges with which they are confronted, while transforming these same realities in the perspective of greater social, economic, cultural and environmental sustainability.

ESD practice manifests itself in many different settings: in classrooms, seminar rooms and laboratories, in local communities and community associations, in museums, in the media, in nature reserves and national parks, in corporate institutions, in all spheres and sectors of production and consumption and in the policy development arena. The great diversity of its manifestations is both ESD's strength and weakness. It can inspire and give direction to learning and education in a great variety of circumstances; it is flexible. Actually one of its important features is that those who "practice" ESD, *i.e.*, "teachers" and "learners," *are invited to experiment with the methods, techniques and content* appropriate to their particular circumstances and context. ESD's flexibility could lead to it being regarded as "all things to all people," however. This is its potential weakness. An "anything goes" interpretation could undermine the concept's traction among educational practitioners and policy makers alike.

ESD's Distinctive Features

In order to enhance ESD's traction, it is useful to identify a number of distinctive features that can guide the search for appropriate ESD practice. They have to do with the educational approaches and methods that will enable learners to actively engage with the three dimensions of sustainable development: (a) natural capital (the planet and its natural resources), (b) manufactured capital (the stock of humanity's physical infrastructure), and (c) cultural, social and human capital (the stock of humanity's knowledge and technology, together with social, cultural and economic formations, arrangements and mechanisms).

Central to ESD is the E of education and learning – the ways and the methods with which people, individually and collectively, understand their reality, come to grips with it and can act on it. ESD postulates that learning does not happen in isolation, but that it is a social act, inside and outside the classroom or seminar room. Knowledge and understanding are not fixed entities, they are continuously unfolding. Learning, moreover, is meaning making: finding one's place or the community's place or the group's place in an unfolding reality and making sense of it, through reflexive action. Learning and education is context and situation-based. Learning and education include knowledge and understanding of scientific facts and processes, but they are also related to prior knowledge and understanding (*e.g.*, cultural norms and indigenous or traditional knowledge). As said before, learning and education recognize that local action and dynamics may have global consequences and vice versa.

ESD is education and learning for sustainable development. Sustainable development refers to the complexity and integrated character of humanity's physical and man-made environment and the development thereof. It recognizes the systemic forward feeding and backward feeding loops between its three central dimensions: planetary/ecological/environmental, social/cultural and economic, linking past, present and future. With the natural environment acting as a boundary and basis for human activity, sustainable development encompasses how human communities interact among themselves and evolve and modify their social, economic and political institutions and mechanisms, while at the same time interacting with their environment, using it, altering it or adapting to it.

Sustainable development recognizes that humans (re-) create their ecological, social and economic environment on a daily basis. Humans are agents, not necessarily pawns or innocent victims. Within more or less permutable boundaries – of nature, of social and cultural arrangements, of economic and political conditions and power – individuals and

groups can exercise their influence to change circumstances and create conditions for greater social, economic and ecological sustainability. It is because of this condition that learning and education are so central. It allows people to take constructive action for creating the conditions for more sustainable livelihoods and well-being of themselves and future generations. Apart from being an individual endeavour, learning and action take place in a social and collaborative setting, involving a variety of groups, often with competing, contesting and conflicting interests.

Both the content of ESD and its "pedagogical" premises have a strong future orientation. In a school setting, from pre-school through technical vocational training to university, pupils and students are encouraged to understand their environments and realities and acquire the skills for making present and future choices that will exercise a positive influence on the sustainability thereof. Similarly, in non-formal and informal learning settings, ESD aims for understanding and responsibility-taking as well as initiatives and investments by individuals and their communities and organizations (locally, regionally, globally) that have "sustainability" repercussions. These actions and initiatives are meant to create conditions for longer-lasting effects, in such a way that future generations will work from a social, economic and ecological basis that is preferably better than what exists today.

With such a complex pedigree, it is no wonder that ESD is not fixed. It is a continuously unfolding concept as well as practice. Through policy, research and practice at local, national, regional and international levels, ESD is moving into a promising direction, while gaining greater public and greater political recognition.

The Articles in the Special Issue

We invite the readers of this special issue to explore how ESD has come into being, how it is unfolding, and how strong ESD's traction can be in terms of policy making as well as educational and learning practice on the ground. In the following sections we offer a brief annotated description of each article, arranged into four groups, dealing with (1) international ESD policy, (2) national ESD realities, (3) biodiversity, ecosystem services and traditional knowledge, and (4) agency and system thinking in practice.

Group one: international ESD policy

The articles in this group depict the international stage on which ESD was launched and the background against which the theory and practice of ESD have been developing since. In addition to offering a brief history of the international discourse, the articles focus on how far ESD has been "adopted" by the international community, and how far it still has to go. This assessment gains significance in the light of the forthcoming Rio+20 Conference (Earth Summit 2012), when this same international community will determine the degree to which it has been able to come to grips with the developmental and environmental challenges that have only increased in significance since Rio (1992) and Johannesburg (2002).

Both TILBURY and WALS concentrate on the evolution of the UN DESD, initiated under the impetus of the Governments of Japan, Germany, Canada and Sweden. On the basis of their close involvement in the DESD the authors sketch possible paths forward. TILBURY focuses on the countries' monitoring and evaluation actions for DESD that have been and still need to be undertaken in order to demonstrate the extent to which they have adopted the language, the policies and practices of ESD. She highlights the goals, principles and results related to the three stages of the process, as developed by the Monitoring and Evaluation Expert Group (MEEG). According to TILBURY, monitoring and evaluation (M&E) is a mechanism for implementing the DESD goals. It enables stakeholders to reflect on the type of changes emerging as a result of ESD actions and to understand the future directions for ESD development.

WALS, the main author of the study reviewing the UN DESD at its mid-term (UNESCO, 2009), argues that traditions of national governance could define the focus of ESD as either facilitating social learning or emphasizing changes in peoples' behavior. From the premise that the diversity of political and socio-cultural realities leads not only to a variety of ESD interpretations but also to a diversity of relations between ESD and EE in the regions, he analyses perspectives and strategies on SD and ESD in the Asia-Pacific region. The author presents "social learning" and "competencies for sustainable development" as promising concepts for exploring learning processes and their outcomes.

Group two: national ESD realities

In contrast to the international view of the preceding articles, the articles in this group join experts and practitioners at the country level. Examined are: how they perceive the international ESD discourse, how they translate ESD concepts and approaches into national policies, how they operationalize those policies and what, according to them, needs to be done for ESD to have broader acceptance and effectiveness.

The articles by LEAL and GROSS & NAKAYAMA are representative of ESD research aiming at informing policy priorities of the DESD. Such survey-based research relies on the input of recognized experts in the fields of ESD and environmental education. The DESD and its strategic priorities, as defined by UNESCO, heavily condition the design of the questionnaires and the interpretation of the results.

LEAL reports on the "state of affairs" of ESD in Europe. He reflects on the results of a survey among ESD experts in the countries belonging to the UN Economic Commission for Europe (UNECE). The author shows that ESD concepts and practice have not yet found enough traction in order to make the difference hoped for. He calls on governments to undertake action that can overcome a number of the constraints identified.

Similarly, GROSS & NAKAYAMA report on a survey conducted among international experts, with a special focus on German and Japanese experts, assessing how far the DESD had moved and how far it still had to move at its half-way point in 2009. They identify networking and the involvement of NGOs, scientists and youth as critical drivers for advancing ESD and accomplishing UNESCO's Action and Strategy Goals in this respect.

NOGUCHI reports on the significant features of community-based ESD cases in Japan and Asia, with reference to two projects carried out by the Japan Council on the UN DESD (ESD-J) – a consortium of Japanese NGOs that have spearheaded a proposal for the DESD. The cases are a good illustration of "situated learning" in practice. From a particular Asian perspective, they emphasize the importance of informal learning processes in community-based efforts for conserving and/or revitalizing local nature and culture and reinventing local identity more in line with sustainability principles – often in response to "development projects" imposed by national or local governments on rural communities.

Group three: biodiversity, ecosystem services and traditional knowledge

Environment and environmental protection are a common entry point for much ESD, but there are many other entry points or lenses as well: climate change, water, food, human rights, health, sustainable production and consumption, livelihoods and lifestyles. One can also view ESD from the perspective of the learners and their particular conditions and cultural traditions. Many of these entry points and perspectives, some more explicit than others, are represented and illustrated in the articles grouped here. They show that for ESD to be credible and effective on the ground it has to embrace and combine "modern," "scientific," "traditional" and culturally and situationally appropriate perspectives and practices.

SUNEETHA & BALAKRISHNAN argue that the threat to or loss of biodiversity and ecosystem services, apart from diminishing the planet's ecological sustainability create inequities in human access to resources and to the benefits derived from them. Education and learning and a greater coherence between different international instruments and schemes, such as the Convention on Biological Diversity and the UN DESD, can make a major contribution to mitigating and redressing the sustainability of natural resources and therefore enhancing the conditions for sustainable human development.

With the "wise use" concept of wetlands as their lens, OFEI-MANU & SHIMANO show how ESD has been operating on the ground in Japan. They present the example of the social-ecological system of Osaki-Tajiri (Japan). They show how, through social and collective learning, local stakeholders have become involved in a process of understanding the ecological and biological intricacies of wetlands and rice paddies, while undertaking actions to enhance the social, economic and ecological sustainability of their community. They also describe the barriers encountered and the great challenges ahead.

From the point of view that sustainable development is about countering and mitigating the effects of the untenable use of natural resources, PAYYAPPALLI & KOIKE demonstrate that biological and cultural diversity are inherently linked, and that they can serve as entry point for ESD practice on the ground. In the case of Kerala, India, they discuss how "modern" and "traditional" health practices and techniques attract and reject each other simultaneously and how traditional or indigenous knowledge can be integrated or "balanced" in practical community learning and education programs.

Group four: agency and systems thinking in practice

The transformational aspirations of ESD, only hinted at in many of this special issue's articles, bring to the fore its potential for change even radical change. ESD goes beyond addressing the classic problems of development. By encouraging agency of all actors in society, ESD has a forward-looking orientation on social innovation and diversity. In this sense ESD holds a clear emancipatory promise. At the same time, ESD is premised on the notion that learning should start from and with the learners' own personal experiences and situations. The three articles assembled here illustrate the underlying principles.

The MEHLMANN *et al.* and TAYLOR articles explicitly work with the emancipatory approach to learning by building on a variety of assumptions and philosophies that challenge conventional learning models, steeped in linear thinking, information transfer and a disregard of learner's agency. In particular, MEHLMANN *et al.* share insights into the nature and principles of effective learning and the application thereof in primary schools in Ukraine. Educating for strong social learning and for strong sustainability – a guiding principle of Global Action Plan International which the authors represent – is discussed from the viewpoint of its theoretical underpinnings, learning processes and teaching methods. The authors stipulate that meaningful and, most importantly, lasting learning can take place only if the learners are empowered to make sustainable decisions or "care to act." Context and learning by and from experience are brought forward as other critical components of behavior change for sustainability.

Similarly to the position of MEHLMANN *et al.*, TAYLOR disputes the effectiveness of simply communicating messages for the purposes of behavior change and calls for different models of teaching, learning and associated social transformation for achieving meaningful and lasting change. He uses the notions of "triad of control," "practical reason" and the "open process framework" to elucidate the elements of situated, collaborative meaning making, while linking them to an actual example of learning during a cholera epidemic in Zimbabwe. He shows that by relating cholera symptoms to scientific facts and explanations, by trying out new ideas and by deliberating the results of such experiments, learners gained a new understanding of cholera, sanitation and hygiene in their social, economic and environmental context. As a consequence, they were enabled to act appropriately.

Building on a variety of examples from policies and practices related to, among others, natural resource use, farming, climate change and economic growth and development, SODERQUIST & OVERAKKER discuss how learning can be incomplete because of common limitations in ways of thinking, such as the application of too narrow boundaries or time frames, the neglect of time delays and the assumption of one-way causality. The authors present a framework for developing mental models that can address adaptive challenges. It suggests using processes, thinking skills and technologies that improve the ability of learners to address systemic and complexity aspects of sustainable development. As illustrations thereof, some educational initiatives that incorporate elements of systems thinking are mentioned.

Observations

The articles in this special issue cannot fully represent the state of play of ESD. Nevertheless, on the basis of ESD's unfolding picture, together with theartciles' arguments and examples, we can formulate a set of observations about the possible directions in which ESD theory, policy, research and practice might be evolving.

It is encouraging to see that ESD thinking and practice are increasingly being connected to global and local initiatives and conventions in such planetary domains as climate change, biodiversity, water, food, economic equity, social justice, etc. For the same reason ESD is connecting itself to development approaches and methods with longer histories and traditions, such as farming systems research and integrated agriculture, rural and community development and mapping, and the use of "indigenous" knowledge. In this sense, ESD is becoming less isolated and more integrated.

The width and depth of the ESD definition allows for multiple interpretations of ESD's philosophy, principles and practices. Due to its rather all-encompassing nature ESD is often seen as a politically convenient "umbrella" for various other educational or learning agendas (*e.g.*, UNESCO, 1996). Rather than providing an overarching framework, ESD can also be seen as a supplementary framework to these other agendas, whether Education for All (EFA), the UN Literacy Decade (UNLD) or the UN Millennium Development Goals (MDGs). It would, however, be naïve to hope that potential synergies will materialize without further critical analysis and carefully supported actions. Because being developed in response to sustainability or development issues in particular geographical, political or social con-

texts, educational movements and sustainability initiatives have their own philosophy, goals and main players, as well as their own unique history. Systematic clarification of the *unique*, the *particular* and the *local* as opposed to or in combination with the *overarching*, the *common* and *global* in these initiatives might help to facilitate actual convergence of efforts, going beyond mere hope or lip service.

However, ESD's multifaceted and all-encompassing nature could also be to its detriment. Because of the difficulty of "grasping" it, there might be a tendency to make ESD more "manageable." This happens, for example, by turning ESD into a somewhat beefed-up version of more narrowly defined "environmental education" or "social studies." It also happens, when ESD – in the international scene – is simply subsumed under the Education for All (EFA) umbrella. In both cases ESD's "critical" characteristics do not receive the credit they deserve. ESD departs from the EFA agenda in that it is relevant to both "developed" and "developing" countries. Because of the rather dominant notion of sustainable development, which seeks to change unsustainable patterns of consumption in a context of "limits to growth," ESD is often viewed as a "luxury" that can be addressed only after "development" has been achieved. ESD-J's efforts to highlight informal learning processes in community-based initiatives for local sustainability in Japan and Asia (see NOGUCHI in this special issue), however, may offer a key to directly linking ESD to poverty reduction in "developing countries." In ESD-J's formulation, ESD is concerned not so much with overshooting the Earth's carrying capacity but rather with a "reappraisal" of what has been or is being lost in the process of rapid modernization. Thus, ESD is essentially conceptualized as a dynamic process of building civil and civic capacity in realizing sustainable local development. It would be a pity if, just in order to enhance its international visibility, ESD's transformative nature would be diluted by an opportunistic alignment of ESD with the MDGs and EFA agendas.

With respect to the results of ESD or ESD's effects on sustainable development, there is a fourth observation. Many of the articles can be regarded as more or less systematic descriptions of certain ESD concepts, policies, situations, projects and practices. A number of them illustrate what ESD is or can be under certain circumstances. However, the evidence of ESD's effects or results is mostly anecdotal. None of the articles refer to actual analytical research using specifically designed and systematically applied data gathering instruments. It could be plausibly argued that traditional social science research approaches and instruments are not particularly suited to ESD. By its own nature, ESD is exploratory, experimental and meaning-making. Therefore, ESD-based initiatives and schemes cannot be observed through a simple input-output lens, where the input is the "teacher" and the instructional content and the output is what the "students""reproduce" in their tests and exams, while what goes on between "teachers" and "students" and "among students" themselves is treated as an impenetrable "black box." A research approach more in tune with ESD's characterizing features should pay explicit attention to what goes on in the "black box" of the learning situation; it should take into account the interaction between the learners and their own home, community, local and global context. Action research, which places a premium on the full engagement and involvement of those whose actions and decisions are "being researched," shows promise in this respect. Nevertheless, there remains the research challenge to produce systematic, reliable and valid "demonstrable evidence" of the actual learning effects among ESD learners and of the influence their "learning" exerts on sustainable development choices and conditions.

Conclusion

The articles in this special issue show the promise and potential of ESD in terms of concept, policy, practice and research. The editors hope that they can spur other practitioners, thinkers, researchers and policy makers to undertake greater and more systematic efforts at documenting and demonstrating what it takes to realize effective ESD in practice. This would be a great contribution to the Rio Earth Summit in 2012 and the UN DESD end-of-decade conference in Japan in 2014.

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