

Education for Sustainable Development Country Status Reports

An evaluation of national implementation during the
UN Decade of Education for Sustainable Development
(2005-2014) in East and Southeast Asia

*Produced as part of a joint research project by UNU-IAS and IGES to develop
Indicators of Education for Sustainable Development to conduct monitoring
and evaluation of its implementation in the Asia-Pacific Region*

Cambodia

China

Japan

Malaysia

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Authors: Robert J. Didham and Paul Ofei-Manu

IGES Policy Report

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FOREWORD

The United Nations Decade of Education for Sustainable Development (2005-2014) has provided the stimulus for significant improvements to educational systems both globally and in the Asia and Pacific region specifically. Education in itself is one of the most important attributes of human civilization and provides the foundations for individuals to live meaningful and fulfilled lives. Education can also be an important catalyst of social change and advancement. The concept of sustainable development helps to elucidate a number of significant challenges for the continued well-being of our planet, its life support systems, and the numerous organisms that depend on these systems. Sustainable development furthermore compels recognition that in order to address these challenges, human society must dramatically restructure its development and growth trajectories and we must also redefine our conceptualisation of progress, well-being, and even happiness. This process of social change requires new ways of learning and understanding about the world around us and our relationships within this world, and education is the foremost means by which humanity has to inspire such a transformative process.

The efforts of the UN Decade of Education for Sustainable Development (DESD) have supported both the integration of education for sustainable development (ESD) into existing educational systems and the reform of these systems to better address capacity building so learners are more able to engage in the debates about our societies' development trajectories as active contributors to building sustainable solutions. In this manner, ESD addresses both the contents of education and the processes of learning. There are many examples, including those presented in this work, that demonstrate the major successes that have already been achieved during DESD for strengthening both educational contents and processes to better achieve learning for sustainable development. However, the challenges for pursuing sustainable development will continue beyond the end of DESD in 2014, and it has already been well recognised that the pursuit of ESD must continue and be strengthened into the future. In fact, the outcome document of the recent Rio+20 – UN Conference on Sustainable Development, *The Future We Want* (2012), reaffirms the support by member states to advance the practice of ESD, “We resolve to promote education for sustainable development and to integrate sustainable development more actively into education beyond the United Nations Decade of Education for Sustainable Development” (para. 233).

Considering how ESD can be more actively integrated into educational systems, it is necessary to first take stock of the achievements already made during DESD while also identifying the major obstacles and barriers for effective ESD implementation. In order to properly conduct this type of assessment, it is necessary to establish appropriate monitoring and evaluation methods for the systematic review of ESD implementation across various countries. The development of such a monitoring and evaluation system is identified as one of the seven strategies for ESD in UNESCO's *International Implementation Scheme for DESD* (2005). Although several attempts have been made to conduct ESD monitoring and evaluation, there is still no existing framework for systematic and structured assessment of ESD implementation that is regularly being applied. One of the reasons for this is that ESD encourages qualitative improvements to educational practices that are not easily captured in the types of quantitative measurements usually applied in educational assessment. A further reason is that as each country contextualises ESD in their own culture and educational

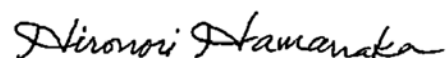
system, it takes on a unique form and process of implementation thus making it challenging to conduct cross-country comparative evaluation on ESD implementation. However, such a systematic approach to ESD monitoring and evaluation is necessary if we are to move beyond the types of anecdotal reporting on ESD best practices which currently prevail and if we are to clearly identify an appropriate direction for future efforts to promote social learning for sustainable development.

The Institute for Global Environmental Strategies (IGES) has been privileged to have the opportunity to collaborate with the United Nations University Institute of Advanced Studies (UNU-IAS) and in cooperation with UNESCO Asia and Pacific Regional Bureau for Education (APRBE) on a research project that aims to develop and pilot a regionally relevant set of ESD Indicators for Asia and Pacific to support strategic monitoring and evaluation of ESD as we move towards the end of DESD. The research team for this project has also been very fortunate to gain the support and collaboration from partners in nine countries in East and Southeast Asia during the first year of scoping research, including seven national ESD focal points who contributed to the reports in this publication. As such, this research has made a substantial investigation of the important inputs and factors that support good ESD implementation and effective learning performance. This year's work provides only a first step in the overall effort to formalise a regional ESD monitoring and evaluation system, but in itself this report provides a valuable contribution to the field of study and the global efforts to better understand the progress achieved during DESD. The ESD country status reports presented within this publication create a clear understanding of how countries are going about implementing ESD while also allowing for the identification of essential factors and capacities in this process.

I would like to take this opportunity to express my gratitude and congratulations to the research team and the authors of this report for their achievements. I would also like to express my sincere appreciation to UNU-IAS for the opportunity to collaborate with them on such an important work and to UNESCO-APRBE for their continued support throughout this research project. Most importantly, this work would not have been possible without the very generous participation of the national ESD focal points. Though there are too many to name individually here (they are noted as contributors), on behalf of IGES and the rest of the research team I would like to thank you for your commitment and cooperation on this research project. I hope that each of you will continue to put such passion into enhancing your country's implementation of education for sustainable development.

Hayama, Japan

5 October 2012



Prof. Hironori Hamanaka
Chair, Board of Directors
Institute for Global Environmental Strategies

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LIST OF ACRONYMS AND ABBREVIATIONS

4As	Aspire, Audit, Adapt, Action
ACCU	Asia-Pacific Cultural Centre for UNESCO
ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
ASPnet	UNESCO Associated Schools Project Network
ASPUnivNet	ASPnet University Network
CCE	Climate Change Education
CEEC	Center for Environmental Education and Communication (China)
CHED	Commission on Higher Education (the Philippines)
CNY	Chinese Renminbi (<i>currency</i>)
CPC	Communist Party of China
CPD	Continuous Professional Development
CSOs	Civil Society Organisations
CSR	Corporate Social Responsibility
DepEd	Department of Education (the Philippines)
DENR	Department of Environment and Natural Resources (the Philippines)
DESD	United Nations Decade of Education for Sustainable Development (2005-2014)
DSD/DESA	Division of Sustainable Development, UN Department of Economic and Social Affairs
EE	Environmental Education
EESD	Environmental Education for Sustainable Development
EFA	Education for All
ELIAS	Environmental Leadership Initiatives for Asian Sustainability (MOEJ)
EMB	Environmental Management Bureau (of DENR, the Philippines)
ESC	Education for Sustainable Consumption
ESCAP	Economic and Social Commission for Asia and the Pacific
ESD	Education for Sustainable Development
ESD-J	Japan Council on the UN DESD
ESDR	Education for Sustainable Development Research Centre (Rikkyo University)
FAO	Food and Agriculture Organization of the United Nations
GMRC	Good Manners and Right Conduct
GT	Grounded Theory
ICTs	Information and Communication Technologies
IGES	Institute for Global Environmental Strategies
ISAP	International Forum for sustainable Asia and the Pacific
JAIE	Japan Association for International Education
JICA	Japan International Cooperation Agency
JSOEE	Japanese Society of Environmental Education
M&E	Monitoring and Evaluation
M&E of ESD	Monitoring and Evaluation of Education for Sustainable Development
MAD	Mixed Approach Design
MDGs	Millennium Development Goals
MEEG	Meeting of ESD Expert Group (United Nations)
MEP	Ministry of Environmental Protection (China)
MEST	Ministry of Education, Science and Technology (Republic of Korea)

MEXT	Ministry of Education, Culture, Sports, Science and Technology (Japan)
MOE	Ministry of Education (China)
MOEJ	Ministry of the Environment Japan
MoEYS	Ministry of Education, Youth and Sports (Cambodia)
NatCom	National Commission for UNESCO
NDRC	National Development and Reform Commission (China)
NEEAP	National Environmental Education Action Plan Framework for 1992-2002 (the Philippines)
NGOs	Non-Governmental Organisations
NIER	National Institute for Educational Policy Research (Japan)
NORAD	Norwegian Agency for Development Cooperation
NPOs	Non-Profit Organisations
NPRS	National Poverty Reduction Strategy for 2003-2005 (Cambodia)
NSDP	National Strategic Development Plan for 2006-2010 (Cambodia)
NSDS	National Sustainable Development Strategy
OECD	Organisation for Economic Co-operation and Development
ONIE	Office of the Non-Formal and Informal Education (Ministry of Education, Thailand)
OPP	Outline Perspective Plan (Malaysia)
PAR	Participatory Action Research
PCSD	Philippine Council for Sustainable Development
PHP	Philippine Peso (<i>currency</i>)
PIS	Period of Integrated Studies
PISA	Programme of International Student Assessment (by OECD)
PPRM	Philippine Rural Reconstruction Movement
ProSPER.Net	Promotion of Sustainability in Postgraduate Education and Research Network
PSSD	Philippine Strategy for Sustainable Development
RCEs	Regional Centres of Expertise on Education for Sustainable Development
SCP	Sustainable Consumption and Production
SD	Sustainable Development
SEDP II	Socio-Economic Development Plan for 2001-2005 (Cambodia)
SEED	Sustainable Environmental Education Project (the Philippines)
SEPA	State Environmental Protection Administration
TEIs	Teacher Education Institutions
TESDA	Technical Education and Skills Development Authority (the Philippines)
TLE	Technical Livelihood Education
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNLD	United Nations Literacy Decade (2003-2012)
UNU-IAS	United Nations University Institute of Advanced Studies
USD	United States Dollar (<i>currency</i>)
WSSD	World Summit on Sustainable Development (Johannesburg, 2002)
WWF	World Wide Fund for Nature

Background of Research on MONITORING & EVALUATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

Beginning in July 2011, the United Nations University Institute of Advanced Studies (UNU-IAS) and the Institute for Global Environmental Strategies (IGES) initiated a collaborative research project in close cooperation with UNESCO Asia and Pacific Regional Bureau for Education. This project focuses on the **Monitoring and Evaluation of Education for Sustainable Development (M&E of ESD)** and aims **to establish regionally-relevant Indicators of ESD** for assessment of the implementation that has occurred during the United Nations Decade of Education for Sustainable Development (2005-2014) in individual countries across the Asia-Pacific region.

The **overall goal of the research project** is to contribute to the monitoring and evaluation of the implementation of Education for Sustainable Development (ESD) through development of progressive indicators for piloting in the Asia-Pacific region. The **main objectives of the project** include:

1. To develop an ESD monitoring and evaluation framework;
2. To develop an ESD learning performance-good practice case framework;
3. To gather data for National ESD Status Reports;
4. To collect case reports on ESD good practice and learning performance;
5. To undertake data analysis to identify leverage points, success factors and barriers to ESD implementation; and
6. To draft pilot ESD indicators for future application and assessment.

This project was developed with regards to the fact that the UN Decade of Education for Sustainable Development (DESD) will come to a conclusion in 2014. Although there is a large amount of anecdotal evidence about the successes achieved under the DESD framework, there is currently no systematic way to evaluate the implementation of ESD across multiple countries. Furthermore, one of the seven target implementation goals for achievement during the Decade clearly states the need for systems to monitor and evaluate ESD performance. With this in mind, this research project was established to first try to identify the important context, factors and leverage points that commonly lead to successful ESD implementation, along with identifying the strengths and barriers in achieving effective ESD learning performance. Second, the research team aims to launch a set of ESD Indicators for Asia-Pacific along with a guidebook for implementing an effective monitoring and evaluation process. These indicators will ideally be both regionally relevant while also being suitable for application by individual countries in the monitoring and evaluation of their own ESD systems. Thus, the indicators will need to be both replicable (allowing for annual systematic usage) and also provide comparability between different countries' ESD implementation.

The strategy for this research was developed to take account of both the quantitative and qualitative nature of educational monitoring and evaluation. However, this also highlights the conceptual challenge for M&E of ESD, which is that to provide meaningful and timely information to support effective interventions in ESD implementation it is necessary to demonstrate how specific educational inputs will support better ESD learning performance (i.e. increasing the quantity of a input should ideally lead to increased quality of ESD). The priority sectors and focal areas for ESD monitoring and evaluation addressed in this research were identified during an Expert Consultation meeting on ESD monitoring and evaluation held in July 2011 as part of the International Forum for Sustainable Asia and the Pacific (ISAP). It was agreed by the experts at this meeting that the target users of the outcomes from the envisioned monitoring and evaluation work should be national governments and relevant policy makers (especially those from the ministries of education and environment). Six different sectors were identified for investigation during the research; these include: National Curriculum, Formal Education, Teacher Training, Non-Formal Education, Civil Society, and the Private Sector.

Following the Expert Consultation held at ISAP 2011, an evaluation framework for identifying the target areas of ESD assessment was developed. This framework was then used to prepare a country ESD survey, and a further reporting format was developed to collect good practice cases on ESD in a systematic manner. Having received the agreement and support of our partner institutes, we then proceeded to initiate the country research and data collection phase of this project. The research utilised two distinct but complementary approaches. First, national ESD focal points were targeted for participation in a quantitative country survey regarding the national context of ESD implementation. Second, the Regional Centres of Expertise (RCEs) were targeted for qualitative research to provide good practice case studies for a comparative analysis.

This research phase of the project from June 2011 to August 2012 was conducted as a multi-country scoping process to identify the important areas for which indicators should be developed. The main research and data collection process occurred between December 2011 and July 2012 in two rounds, starting first with selected countries in East Asia and then following a refining process moving on to selected countries in Southeast Asia. During the scoping phase, research was conducted across a total of nine countries. Throughout the year long research process, two sub-regional reporting and capacity building workshops on M&E and ESD were held. Additionally, two meetings were also held with the Expert Consultation group to review the process and findings of the research project

The main purpose of this research process is to enable the movement from a wide evaluation framework towards the identification of a core set of important targets and leverage points for ESD. Thus, the scoping research phase was followed by the refinement of the selected ESD leverage points in order to

elaborate a set of regional ESD indicators. These proposed indicators went through a further review from the expert working group before their final drafting.

Four major outputs are expected as the products of this year's research. First, a compilation and comparative evaluation of ESD Country Status Reports will present the current status of ESD implementation in the seven reporting countries. Second, based on the ten good practice cases submitted by the RCEs, these cases are analysed to identify the important criteria for ESD qualitative achievements and develops a learning performance assessment framework for ESD. Third, a theoretical discussion of the process for monitoring and evaluation of ESD is presented and compared with the identification of specific leverage points for ESD implementation from the previous two reports to present an overall framework of the main factors and contents of effective ESD implementation. Finally, the specific ESD Indicators for piloting are identified and explained in a guidebook for ESD monitoring and evaluation in the Asia-Pacific region.

With continued usage and development of these indicators, it would be possible to provide substantial reporting on the status of ESD across the Asia-Pacific region and to provide a comprehensive report of the achievements made during the UN Decade of Education for Sustainable Development. These indicators should also serve as a valuable tool for individual countries to analyse their own ESD systems and to conduct a strategic needs assessment for planning future interventions for strengthening ESD implementation. Furthermore, a comprehensive study of ESD implementation in the region would also provide policy recommendations about how to continue to improve ESD into future.

The success of this research owes a significant debt to the generous participation of numerous contributors throughout the entirety of this research project (the specific contributors to this report have been noted on the title page). Over twenty-five people contributed directly to the data collection, country status reports and good practice cases. An additional group of fifteen experts provided review and consultation support for the overall research process. The continued support of UNESCO Asia and Pacific Regional Bureau for Education was invaluable throughout this work. The authors of this work and the members of the research team would like to express our deep gratitude to all of these individuals and organisations who have so eagerly cooperated with this research, and who continue to demonstrate a sincere willingness to improve the global implementation of Education for Sustainable Development.

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INTRODUCTION

We recognize that the younger generations are the custodians of the future and the need for better quality and access to education beyond the primary level. We therefore resolve to improve the capacity of our education systems to prepare people to pursue sustainable development, including through enhanced teacher training, the development of sustainability curricula, the development of training programmes that prepare students for careers in fields related to sustainability, and more effective use of information and communications technologies to enhance learning outcomes. We call for enhanced cooperation among schools, communities and authorities in efforts to promote access to quality education at all levels.

United Nations General Assembly. *The Future We Want – Outcome Document of UN Conference on Sustainable Development*. Rio de Janeiro, 24 July 2012 (paragraph 230).

The United Nations Conference on Sustainable Development (Rio+20) was held in July of 2012 in Rio de Janeiro, Brazil as a twenty year anniversary to the original Rio Earth Summit (1992) that is now famous for establishing the original international political momentum for sustainable development and the dissemination of *Agenda 21*. At Rio+20, Heads of State and Government met to reconfirm these political commitments for the global achievement of sustainable development and to address the persistent implementation gaps that have hindered its achievement over the past twenty years. The outcome document of Rio+20, *The Future We Want*, produced over 280 paragraphs of non-binding, voluntary commitments. Education though, and especially education for sustainable development, received strong calls for support and strengthening, including the statement, “We resolve to promote education for sustainable development and to integrate sustainable development more actively into education beyond the United Nations Decade of Education for Sustainable Development”(UN General Assembly, 2012: paragraph 233). Education was acknowledged to be a fundamental building block for achieving sustainable development, and it is seen as a necessary precursor to reaching many of the other commitments made by the heads of state and government.

Of course, Education for Sustainable Development (ESD) itself has a long and rich history that links back to *Agenda 21* with its call for “reorienting education towards sustainable development” (UN General Assembly, 1992: paragraph 36) and its reaffirmation of the principles of the Tbilisi Declaration on Environmental Education from 1977. ESD is now promoted as an important social process to engender a culture that is respectful to the core principles of sustainable development. At the 57th session of the UN General Assembly in 2002, it was decreed that 2005 to 2014 would be marked as the Decade of Education for Sustainable Development (DESD), and UNESCO was mandated as the lead agency for managing the implementation of the decade. With the overall goal of integrating the principles, values and practices of sustainable development into all aspects of education, the framework for the decade is set out with four main objectives:

- facilitate networking, linkages, exchange and interaction among stakeholders in ESD;
- foster an increased quality of teaching and learning in education for sustainable development;
- help countries make progress to attain the millennium development goals through ESD efforts;
- provide countries with new opportunities to incorporate ESD into education reform efforts (UNESCO, 2005a: 6).

It is also expected that links will be drawn between these objectives and other important international processes including the Millennium Development Goals (MDGs), Education for All (EFA), and the United Nations Literacy Decade (UNLD) which requires UNESCO to coordinate the activities for the decade with other relevant international agencies, national governments, and civil society organisations.

The International Implementation Scheme for DESD also identifies seven strategies for establishing effective implementation plans for ESD:

- vision-building and advocacy;
- consultation and ownership;
- partnership and networks;
- capacity-building and training;
- research and innovation;
- use of Information and Communication Technologies (ICTs);
- monitoring and evaluation (UNESCO, 2005a: 17).

Although progress has been made across several of these strategies, the lack of a systematic means to monitor and evaluate the progress of ESD implementation under the framework of the decade is still a notable challenge. If improvements and advancements are to be made to the implementation and performance of ESD as we move beyond the end of the decade, then it is essential that a strategic assessment is made of the successes and impacts achieved during the decade while also clearly identifying the continuing barriers to effective ESD implementation.

Framing of Education for Sustainable Development

In the framework for DESD, UNESCO defines education for sustainable development in three parts:

- It means education that enables people to foresee, face up to and solve the problems that threaten life on our planet.
- It also means education that disseminates the values and principles that are the basis of sustainable development (intergenerational equity, gender parity, social tolerance, poverty reduction, environmental protection and restoration, natural resource conservation, and just and peaceful societies).
- Lastly, it means education that highlights the complexity and interdependence of three spheres, the environment, society – broadly defined to include culture – and the economy (UNESCO, 2005b: 5).

ESD includes a complexity of concepts, theoretical constructs, policy prescripts and practical methods/tools that aims to reshape the ability of educational systems to effectively deal with the socio-economic and ecological dimensions of sustainable development (Lenglet et al., 2010). The diversity of ESD and its thematic topics has been one of the challenges for assessing effective ESD implementation as this complexity allows for a variety of different interpretations and applicationw. However, this is also considered one of the assets of ESD as it allows for more versatile contextualisation both at national and local levels.

“[L]eaders and individuals from traditional disciplines need to develop ESD in a trans-disciplinary manner... The strength of ESD will come through diverse disciplinary contributions woven together to accomplish a shared vision of sustainability” (Hopkins and McKeown, 2002: 18). To achieve a trans-disciplinary approach to ESD, each discipline should still develop its own core knowledge and strengths, but then these various understandings and perspectives should be brought together in a holistic manner to achieve a new knowledge paradigm that extends beyond the boundaries or narrow conceptualisations of any one of these disciplines. Thus, it is argued that ESD must provide more than the mere transfer of knowledge on sustainable development thematic topics, as it must provide the stimulus for a reformative approach to education that will strengthen value and skill-based learning for sustainable living and a reframing of conceptual schema and social worldviews that will allow learners to better address SD challenges in practical application to their own lifestyles and livelihoods. This type of action-oriented and problem-based learning changes the nature of the relationship between the learner and the subjects he or she is learning. Rather than viewing the learner as an abstract observer of closed and static systems, this provides a critical pedagogical approach to ESD that places learners at the centre of a socially-constructed and dynamic system for which their education is helping to develop the capacity to become an effective agent of change for social transformation.

In the mid-term review on DESD, UNESCO identified the application of two distinct pedagogical interpretations of ESD:

- ESD as a means to transfer the ‘appropriate’ sets of knowledge, attitudes, values and behaviour; and
- ESD as a means to develop people’s capacities and opportunities to engage with sustainability issues so that they themselves can determine alternative ways of living. Where the emphasis is placed is likely to depend on the traditions and specificities regarding issues like governance and participation in a particular region or country (UNESCO, 2009: 27).

In the second interpretation, ESD goes beyond mere topical or ‘single-issue’ education, such as peace education, health education or citizenship education. ESD proponents outline a reframed pedagogy of education as a process for engendering citizens with the ability to understand the relationships between themselves and the natural and social environments along with an ethic that supports betterment of society

through sustainability. Education thus must not only be about information provision, but it requires the learning of advanced skills in systems thinking, critical analysis and participatory citizenship.

Another way of explaining the transformative process that many ESD proponents stress is through the division of 'first order', 'second order' and 'third order' learning. Stephen Sterling explains in his brief on *Sustainable Education* (2002) that learning activities can be categorised based on the types of change they promote. First order learning is the functional and informative education, which is the primary activity of most formal learning institutions, that provides knowledge without any examination of the values and beliefs that predicate these understandings. Second order learning provides skills of critical reflection and engages the learner in direct examination of the predicating value-belief systems that shape knowledge frameworks. Third order learning takes this educational process further and promotes the creative exploration of different ways to structure our knowledge frameworks including the direct examination of prevailing worldviews in consideration of if these constructs provide the most meaningful/functional understanding for dealing with the challenges society faces at present. Sterling explains the problem that the predominance of first order learning leads to, "[M]ost mainstream education *sustains unsustainability* – through uncritically reproducing norms, by fragmenting understanding, by sieving winners and losers, by recognizing only a narrow part of the spectrum of human ability and need, by an inability to explore alternatives, by rewarding dependency and conformity, and by serving the consumerist machine" (2002: 14-5). Sterling explains that the distinction between first order and second order learning is very important when considering the possibility of a 'new educational paradigm', as second and third order learning open the potential for the practical application of ESD through the provision of learning skills to directly consider how society (and us individuals) shapes its worldviews and understandings of development processes.

In order to frame what a new educational paradigm shaped by ESD would entail in practical terms, it is necessary to discuss educational pedagogies and methodologies as the corner stones of a progressive vision of ESD. As much as ESD includes a series of thematic topics on important SD topics (including climate change, sustainable consumption and production, eco-literacy and environmental science, disaster risk reduction, indigenous knowledge, etc.), it can be argued that at the heart of ESD is a focus not on what we learn but rather on how we learn and especially how we can continue learning as a lifelong process in relation to a socially-constructed reality that is dynamic and rapidly changing. However, ESD, and similarly the wider concept of sustainable development, can also be understood as creating a type of conceptual clearing house that instead of establishing a completely new set of knowledge, perspectives, methods or concepts has rather developed a framework that supports the inclusion and integration of a wide range of pre-existing ideas and theories. Such is the case with the educational theories and methodologies that guide ESD which pull together a wide set of concepts into a single, although not completely cohesive, application. These

theories and methodologies include experiential learning theory (developed by Kolb and drawing on the works of Dewey and Piaget), communicative action and reason (by Habermas), critical praxis and critical pedagogy (by Freire and Ledwith), cooperative inquiry (by Heron and Reason), communities of practice (by Lave and Wegner), social learning theory (by Bandura), and farmer field school model (developed by FAO); just to name a few of the educational theories and methodologies that help to ground the transformative learning experience that is espoused in ESD.

When ESD can draw both inspiration and procedural structure from so many different concepts, the challenge is thus finding a cohesive and meaningful construct for its planning and implementation. It is possible though to provide a relatively clear definition of what the practice of ESD looks like when working towards second and third-order learning if we define it in relation to the learner. Several principles of ESD learning can be contrasted to traditional learning approaches:

- Student-centred learning (rather than teacher-directed learning);
- Engaged learners (rather than abstract observers);
- Cooperative and social learning (rather than individualistic or even competitive learning);
- Learners oriented towards problem solving and practical experience (rather than information memorization and rote learning);
- Critical awareness and reflexivity to create personal knowledge constructs (rather than rationalistic, factual transmission) ;
- Learners' perception guided by interdisciplinary, holistic systems thinking (rather than disciplinary boundaries and constructs);
- Learning objective to create socially aware and responsible citizens (rather than transmission of core knowledge set);
- Learners who appreciate interdependent relationships between themselves, society and ecosystems (rather than individualistic orientation).¹

As can be seen from the above list, these principles of ESD are mainly concerned with the educational/learning process of ESD, or its pedagogy. There is of course also a significant amount of discussion on the contents and thematic topics contained within ESD², but that part of ESD is usually more readily agreed and applied than the pedagogical approach. However, there are several examples from the country surveys where these innovative learning methodologies are being applied both in the classroom and in teacher training.

¹ This list summarises some of the key ideas that are mentioned in ESD literature regarding the ways in which ESD can be utilised to reform current education systems, however it is neither complete nor universally accepted.

² For a description of the contents of ESD, see the ESD Lens Review Tool 2 on the integrated elements of ESD in UNESCO's *ESD Lens* (2010) or Ofei-Manu and Didham's (2012) list of Sustainability Competencies divided into the commonly recognised categories of knowledge-based, skill-based, and value-based learning.

Research Process and Methods

Research Process:

The early concept and proposal for this research project was initiated through a series of consultation discussions between the ESD programme at UNU-IAS, the Governance and Capacity group at IGES and members of the ESD team at the Asia and Pacific Regional Bureau for Education of UNESCO. The research team then initiated an investigation of relevant strategies for implementing ESD and worked to develop an evaluation framework for analysing the important factors and capacities necessary for implementing effective ESD. The development of this framework was supported by a consultation process with international ESD experts. Based on the finalised evaluation framework, a research survey was prepared for reporting on the important elements of ESD implementation status at a country level (see Appendix A for the original version of this survey).

A selection criteria was then developed to identify potential countries for participation. This was a simple criteria to ensure that the country would be able to provide relevant and useful information on their ESD implementation and that they would lend to good comparability between the countries. The criteria was based on three factors: first, the geographic location was narrowed to countries from either the East or Southeast Asia sub-regions; second, the countries were required to have recent active involvement in the monitoring and evaluation of ESD process that has been led by UNESCO's regional bureau; and third, the countries should each have at least one Regional Centre of Expertise (RCE) on ESD (to enable the corresponding qualitative study of good practice cases). These criteria led to the identification of nine appropriate countries. There were three countries from East Asia: China, Japan and the Republic of Korea. There were six countries from Southeast Asia: Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Unfortunately, though we were able to receive RCE participation from all selected countries, it was not possible to secure the participation of a national focal point from either Indonesia or Vietnam.

Once the evaluation framework, survey format, and country selection criteria were finalised, then activities turned toward initiating the primary research and data collection process. The first step in this process was to identify a partner to perform the role of national focal for M&E of ESD. In most cases, this began by contacting each country's National Commission for UNESCO (NatComs), and in some cases we were able to gain direct support from the NatComs. In other cases, potential focal points were recommended by the NatComs, or additional experts were identified by research partners and consultants. In total, we were able to establish cooperation from seven national focal points to provide ESD country status reports (these partners are identified on the title page of this report). In most cases, these focal points engaged with other experts and professionals in their respective countries to ensure appropriate reporting across the range of

sectors covered in the survey. The research team also provided support and cooperation with the national focal points to ensure a similarity of reporting among the seven countries.

These ESD country status reports were then presented alongside the parallel case studies of ESD practice from the RCEs at two sub-regional reporting and capacity building workshops on M&E of ESD. The first workshop was held for East Asia on 20 February 2012 in Yokohama, Japan. The second workshop was held for Southeast Asia on 23-24 April 2012 in Bangkok, Thailand. Along with the ESD country status reports and the case studies on ESD practice, the workshops also included panel discussions considering effective government interventions for improving ESD implementation and capacity building activities on ESD assessment and M&E and also on addressing effectiveness of ESD learning performance.

These two workshops were the formal culmination of the data collection process, although some follow up was conducted between the research team and the national focal points to clarify any points of confusion from the submitted ESD country survey. The survey information was then utilised to prepare ESD status reports (presented in section 2 of this report) for the seven countries and to conduct a comparative assessment of status reports (presented in section 3 of this report). A general analysis of these reports found both common strengths and barriers in ESD implementation across the countries, while it also identified several unique implementation factors applied by only one or two countries. In the subsequent report *Monitoring and Evaluation of ESD*, the information and findings from this report and also from the *Learning Performance Assessment in ESD* report presenting the RCE case studies are brought together to provide a combined quantitative and qualitative understanding of what constitutes effective ESD performance to identify the important leverage points and success factors in ESD implementation for supporting the development of regionally-relevant ESD indicators for piloting.

ESD Country Survey:

The ESD Country Survey covered a diverse set of sectors including: national curriculum, formal education, teacher training, non-formal education, community & civil society, and the private sector. The framework also addressed a variety of capacities in each of these sectors that includes the inputs, throughputs and outputs of each sector. Where possible, the national focal points were asked to coordinate a cooperative response among relevant ESD policy makers and experts in their countries. In the ideal processes, the national ESD focal points initiated a multi-stakeholder response process where the relevant agencies and officers provided responses on the individual sections of the survey for which they are responsible in regards to ESD implementation.

The directions for the survey also explained that in answering the questions, the respondent should reflect their country's own understanding and interpretation of ESD. Furthermore, it was explained that it was

unlikely for all questions to be either relevant or answerable for each country and that this was fully expected, but in this case the respondents were asked to utilise a simple coding to expand on the reason why the question could not be answered (i.e. a negative response or does not exist; that the information is not available or possible to find; or that the question was not applicable to the country's context). The survey asked for multiple types of responses to the different questions to create a greater level of understanding regarding ESD implementation in each country, including quantified answers and ranking, general positive or negative responses, selection of items from lists/bullet points, and open ended responses for qualitative and/or detailed explanation.

However, there are limitations related to this survey process that are worth noting. As this year's research was established as a wide scoping process, the concern was on providing a wide coverage of ESD implementation across multiple countries for comparative evaluation rather than on the depth of coverage per individual country. As such, there was only limited testing of reliability for provided responses, and this issue needs addressed further in future research. In some cases, reporting was also limited by available information, and this may mean that important aspects of ESD implementation per individual countries were overlooked. Nonetheless, the hope of the approach utilised in this project is that it has provided appropriate means to investigate the common factors and leverage points in ESD implementation across countries which are identified through the comparative country evaluation. It should also be noted that the country ESD status reports are presented as informal assessments of ESD implementation, and although relevant government agencies supported the preparation of these reports they are not presented as official statements by these governments. Rather, these informal reports have been prepared in lieu of an existing standardised system for countries to provide formal, official reports on their ESD implementation status.

Methodology:

This research employs a mixed-methods research strategy based on a mixed approach design (MAD). The MAD enhances construct validity and methodological triangulation in order to substantiate research findings. The MAD is guided by the overall systematic approach of grounded theory and the application of selective coding. For the quantitative data collected in this report, a capacity analysis was used during the comparative country assessment. For the qualitative data from the RCE case studies collected in the learning performance assessment report, data is assessed through theoretical sampling and analytical induction. The main findings from these two assessments are then paralleled in the M&E of ESD framework report to try to identify some level of correlative links between system inputs, throughputs and outputs for ESD. Finally, as a real world research process that depends on direct interaction with national focal points for knowledge generation and data collection, the research also employed the basic steps of the action-reflection cycle of participatory action research (PAR) to test the validity of initial findings and conclusions in direct relation to

its relevance to each country's ESD implementation experience. The basic cycle of PAR is highlighted through four steps of: 1) planning, 2) acting, 3) observing, and 4) reflecting

Further explaining the various methods, mixed-methods research is an appropriate means to collect and analyse a complex set of quantitative and qualitative data, especially when grounded by a postmodernist recognition that no single set of data can provide conclusiveness. This approach allows the researcher to approach the same research subject from multiple perspectives and angles, and provides for increased methodological triangulation. The mixed approach design is an extension of the mixed-methods research process which allows for the combination of multiple research interests. In this case, combining a desire to quantify the effectiveness of ESD implementation – including the identification of both primary success factors and significant barriers in ESD implementation – with an evaluation of the quality of distinct learning opportunities for ESD to identify important educational tools and methods for teaching sustainable development. MAD allows for complementarity and comparability between findings generated by different methods.

Underpinning this approach is the methodological understanding of grounded theory which allows for the generation of theory during the research process and from the analysis of collected data. This is an appropriate approach when the research is not based on set hypothesis testing as is the case here, and instead allows for the reverse engineering of a hypothesis. This methodological approach uses a process of coding for collected data to disaggregate data into relevant concepts and categories, and can be used to identify primary factors of influence. Grounded theory was first postulated by Glaser and Strauss in their 1967 publication *The Discovery of Grounded Theory*, and since then both authors continued their development of this methodology although at times in slightly contradictory directions. One of the starting points of grounded theory was to enter the research process without preconceptions or a priori theories, and thus “requires a researcher to approach the problem situation with an open mind and allow the evidence accumulated to dictate the ‘emerging’ theoretical agenda” (Ng and Hase, 2008: 156). For the purpose of this research, the movement towards a post-positivist approach argued for by Strauss and Corbin (1998) provides more benefit than the reductionist approach argued for by Glaser (1992) due to Strauss and Corbin's inclusion of both the assumption of an objective, external reality and the approach to giving adequate voice to one's respondents (Charmaz, 2003: 250).

Glaser (2004) explains though that, “GT [grounded theory] is inducted from systematically collected facts, which in the process for generating GT from data, constantly verifies its fit, relevance and workability, and adjusts (modifies the concepts and their relationships) the theory to the facts to achieve fit, relevance and workability” (internet: section 1). Theoretical sampling and analytic induction also provide important support for developing grounded theory. Rather than traditional statistical sampling based on probability theory and

aiming for statistical inference, theoretical sampling selects important criteria or cases for further analysis selected for achieving a deeper understanding of the research topic and for the development of analytical frameworks. Using additional methods of MAD, it is possible to demonstrate construct validity through triangulation. Analytic induction provides the means for strengthening this process through the systematic categorisation of similarities or commonalities, while also allowing for the flexible adaptation of concepts throughout the research process. This process is notable for its application of inductive reasoning rather than deductive reasoning, which is required in this type of practical output oriented research in order to derive and test general propositions based on investigation of specific examples.

Purpose and Structure of Report

This report, as already mentioned, has been developed as part of a series of three research publications on the research project led by UNU-IAS and IGES on monitoring and evaluation of education for sustainable development, especially in the Asia-Pacific region. This report specifically focuses on the study of ESD implementation at a national level and tries to identify the important success factors and leverage points in ensuring effective ESD systems. The information contained here within is based on primary research collected in collaboration with national ESD focal points from seven countries in East and Southeast Asia based on the main data collection method of the ESD country status surveys and supported by additional information collected during the two reporting and capacity building workshops.

Section Two of this report presents the seven ESD Country Status Reports. Each country status reports details the information as collected from the survey, and thus also demonstrates the extent to which countries can currently report on their ESD implementation. As more systematic methods are developed to support M&E of ESD, the expectation is that the quality of such reporting will be enhanced. Following the country reports, a series of seven tables are presented highlighting the findings from these country reports across the major sectors investigated during this research process.

Section Three of this report provides a comparative assessment of the implementation status of ESD across the seven countries. A capacity analysis is then conducted in order to identify key system leverage points for ESD implementation. In the subsequent report on developing an M&E of ESD framework, these leverage points will be paralleled with the findings on ESD learning performance in order to gain a better understanding of the correlation between implementation and educational outcomes, or more generally between ESD process and practice. Finally, this section concludes with a discussion of general findings from the assessment of the ESD country status reports, and some recommendations for common improvements to ESD implementation based on these findings.

SECTION 2

Status of ESD Implementation of selected countries in East and Southeast Asia

ESD Implementation in CAMBODIA

Education for Sustainable Development in Cambodia has a young but vibrant history. The implementation of ESD has been closely linked to a series of strategic development changes by the national government that occurred during the 2000s. Some of the notable earlier plans include the Socio-Economic Development Plan (SEDP II) for 2001-05, the National Poverty Reduction Strategy (NPRS) for 2003-05, and the National Strategic Development Plan (NSDP) for 2006-10 which details the country's "Rectangular Strategy for Growth, Equity and Efficiency". Starting in 2006 with the support of Asian Development Bank (ADB), the Norwegian Agency for Development Cooperation (NORAD), and UNEP, the government of Cambodia began to develop a new National Sustainable Development Strategy (NSDS) (DSD/DESA, 2009). The NSDS for Cambodia was officially launched in August 2009 and details the overall vision for development in the country until 2030. It was expected that the follow-up NSDP to the one mentioned above would directly incorporate the ideas of this vision into a more implementable format, thus becoming the National *Sustainable* Development Plan for 2011-2015.

Shortly after the development of the NSDS, the government of Cambodia, with the support of UN ESCAP (funded by the Korean International Cooperation Agency) and later supported by the Global Green Growth Institute, began work on also developing a National Green Growth Roadmap in 2007 which was officially launched in 2010. The government has further established a National Committee for Climate Change and a National Committee for Green Growth to address relevant policy issues. Both of these committees do address how these issues can be integrated into educational policies.

There is no specific, individual policy mandate for ESD in Cambodia, but the importance of education to support the achievement of the above development strategies and plans is recognised and indicated in these various documents especially in relation to meeting the objectives for sustainable development and green growth. For example, the NSDS calls for strategic measures to:

- Develop together with schools on various levels a school curriculum where SD issues are integrated;
- Formulate a communication program for raising the public awareness on SD in the country (Royal Government of Cambodia, 2009: 16-7).

The thematic SD areas to be addressed by ESD cover 90% of the surveyed areas; including: national curriculum, primary and secondary education, higher education, non-formal education, teacher training (both pre-service and in-service), community participation, and the private sector. The only area in which specific coverage is not indicated is in regards to civil society.

National Curriculum

Sustainable development topics have been integrated into certain traditional subjects of the national curriculum, especially in economics and environmental subjects. One example is the incorporation of ESD into 'Earth and Environment' subject taught for grades 10, 11, and 12. As an add-on topic though, ESD itself is not ingrained into the educational policies, strategies or methodologies of the national curriculum nor has it led to wider educational reform in Cambodia. Rather, it is treated in a matter where relevant topical information and knowledge from ESD has been linked to and utilised in those subjects that address areas which corresponds to the government's development objectives on sustainable development, green growth and climate change. For this reason, there are also no clear learning objectives detailed for ESD beyond it aiding in the achievement of the country's development objectives.

The government of Cambodia engages in international cooperation activities and events on ESD including those linked to DESD, and a RCE has been established in Greater Phnom Penh. There is no coordination of inter-ministerial cooperation on ESD implementation in Cambodia though, and curriculum development for ESD lacks research support from the academic community. Good communication does exist for explaining the inclusion of ESD in the curriculum to those responsible for its implementation, and this in turn supports an effective path for decentralising ESD from the curriculum to classroom and into course contents/teaching materials. As with other countries in this report, Cambodia does not have a system of feedback mechanisms to support further ESD improvements and reform.

Formal Education

The survey information available on the implementation of ESD in formal education was very limited. For some questions, information was not available to provide an answer, but in several cases the answers were negative. For example, ESD in Cambodia does not include progressive learning objectives, links to specific teaching strategies or educational theories, use of multi-media formats, practice standards or auditing mechanisms for ESD teaching. Furthermore, ESD implementation is not supported by school boards, nor have whole-school management approaches for ESD been tested/applied in Cambodia. However, most of the major thematic SD topics are covered by ESD implementation; including climate change, SCP, indigenous knowledge, cultural values and ethics (underpinning sustainable lifestyles), and national plans for sustainable development. The only topics not addressed are disaster risk reduction and mitigation & adaptation. Though some schools have ESD teaching materials, wider distribution is still needed.

Teacher Training

Student teachers in Cambodia are now required to receive training on ESD, and some of teacher education institutions are already providing such training. Student teachers are also gaining the chance to engage with SD experts and professionals to gain practical experience on SD issues. ESD training by the TEIs provides guidance on innovative learning methodologies, and all of the major SD thematic topics are addressed in teacher training except for disaster risk reduction. The National Institute of Education, in cooperation with UNESCO, has conducted national workshops on ESD as part of their pre-service teacher training program.

Within schools and the classroom environment, it is more difficult to assess capacity building activities for ESD. Information on the amount of in-service teachers who have received ESD training is not available. Mechanisms for teachers to share good practices on ESD do not currently exist, and there is not assessment conducted on the ESD teaching that is occurring.

Non-Formal Education

The Ministry of Education, Youth and Sports (MoEYS), the Ministry of Environment, and the Royal Academy of Cambodia all take authority for implementing non-formal ESD activities in Cambodia, but there are no specific corresponding authorities at the local level. Together, these agencies manage to conduct a very regular frequency of initiatives and events to engage the public in awareness raising about sustainable development issues. There are no specific targets or objectives outlined for non-formal ESD though, and the initiatives that do occur do not apply specific learning methodologies or approaches.

Community and Civil Society

There are existing, multi-stakeholder networks and partnerships on ESD in Cambodia, and the government works to support and cooperate with them. The government helps to organise workshops and support ESD awareness raising activities in cooperation with these networks. The efforts of NGOs in Cambodia support coverage of all the major SD themes. The government further encourages SD awareness through the use of media technologies, especially television and radio. Finally, there is good interaction with regional and international ESD activities with the government encouraging the attendance of staff members for knowledge exchange.

Private Sector

The government initiates and provides training activities for business leaders on SD, and the private sector in turn takes an active role in encouraging ESD in Cambodia. Businesses provide in-service training for their staff on issues such as environmental management, SCP, and supply chain greening. They also engage in consumer awareness raising initiatives to promote eco-products and sustainable consumption.

Conclusion

With ESD uptake in Cambodia being closely tied to the national development documents, especially the National Sustainable Development Strategy and the Green Growth Road Map, that were largely generated by efforts of international development agencies and only taking effect in the past three to four years, we find that ESD has a very young history in Cambodia. Furthermore, since the main national calls for ESD are those tied to the national development plans rather than to clear calls for ESD curriculum development, the handling of ESD does not carry a strong understanding of the unique learning approaches or methods of ESD that are espoused by the international and academic communities. Rather, ESD is treated as an inclusion of important SD topics and issues into the traditional disciplines and educational approach of the country.

UNESCO actively promoted ESD uptake at the beginning of DESD in Cambodia, and this generated a lot of interest by the government and a series of conferences and workshops to support its uptake. The resulting integration of ESD into the curriculum and its implementation has had to struggle to keep pace with the establishment and connection to each new national development plan or strategy that have recently been prepared at almost a pace of one per year. Nonetheless, ESD implementation in Cambodia is moving forwards and has done so in a short time period. There are still many policy improvements that could be recommended including better mainstreaming of ESD learning approaches and methodologies into the national curriculum and treatment of ESD in a more holistic manner, but with this said it must be acknowledged that the extra weight of focus Cambodia has placed on teacher training for ESD is really quite an appropriate way for addressing these issues in an effective manner over the medium to long-term period. In fact, in many countries it is possible to identify situations where the curriculum calls for movement to more progressive approaches but that cannot be effectively addressed because no teacher training has been provided on these approaches. So Cambodia's focus to start with the teachers first for learning about ESD may cause some short-term delays in implementation but will support better integration of ESD in the future.

ESD Implementation in CHINA

The original calls for Education for Sustainable Development in the P. R. of China go back to 1994 when the country developed its national response to the United Nations action plan for sustainable development *Agenda 21* which was one of the outcomes adopted at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil in June 1992. As a response to this action plan, the Chinese government prepared and enacted the *White Book of China Agenda 21* in 1994. Chapter six of China's Agenda 21 plan specifically addresses the need for Education and Capacity Building in Sustainable Development and calls for education to, "strengthen to instill the idea of Sustainable Development to educatee. The contents about resources, ecology, environment and Sustainable Development should be brought into the subjects of Nature in primary school, Geography and so on in middle school."

The Chinese government enacted in 2002 an "Action Syllabus of Sustainable Development in China at the beginning of the 21st Century". This was prepared as a response to the calls for strengthening education initiatives on sustainable development that came out of the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa in 2002. This text calls for greater support for sustainable development in China through application of scientific and educational methods, by initiating discussions of sustainable development in science disciplines at primary school, and by utilising universities to conduct modelling for sustainable development.

The promotion of the Green School project initiatives in China has provided an example of best practice in environmental education that has been replicated by multiple countries in the Asia-Pacific region. Originally launched in 1996 with funding from the State Environmental Protection Administration (SEPA) and as an initiative of the Ministry of Education (MOE), in 2000 the Center for Environmental Education and Communication (CEEC) took over management of this project.¹ The green school project took inspiration from the European Eco-school models and especially the program developed by the Foundation for Environmental Education (Henderson and Tilbury, 2004: 2.2). In 2003, CEEC launched an additional initiative, the campus environmental management project, to coincide with the green school and to encourage better environmental and energy-saving management in the participating schools. Along with these national efforts and many other initiatives, CEEC has actively participated in international activities such as UNESCO and

¹ CEEC was originally an affiliated organisation of SEPA. SEPA was replaced in 2008 when the Ministry of Environmental Protection was formed, and CEEC is now part of the ministry. Along with the national CEEC, it operates a network of 67 regional CEECs across China.

UNEP's combined Youth X Change project (Choi and Didham, 2009: 71-86). The campus environmental management project is noted for creating three major benefits: 1) environmental benefit – by practicing responsible consumption and reducing environmental impacts of school campus management; 2) economic benefit – optimisation of resource and energy usage can result in significant financial reduction in operational costs (the average savings across pilot schools in 2006 was estimated to be 15,700 CNY (~2,470 USD)); and 3) educational benefit – by providing important experiential learning opportunities where students can investigate first hand environmental management principles while teachers and administrators also gain more environmental awareness and more progressive learning methodologies (Yang, 2009: 106-7).

The State Council of P. R. China expressed in 2005 that China should aim to develop as resource-conserving and environmentally friendly society along with promoting the idea of achieving a “circular economy” to support this (Tian, 2011: 13-14). In 2008 at the Eleventh Conference of the National Party of China, the “*Circular Economy Promotion Law of the People's Republic of China*” was then agreed (Choi and Didham, 2010: 5). The Ministry of Education provided educational guidelines to correspond with these new mandates for the country's development in “Environmental Education Guidelines for Primary and Middle School” and “The syllabus of theme education on environmental education for primary and middle school” (Tian, 2011: 14-7).

The promotion of sustainable development in education curriculum in China has mainly occurred in the context of environmental education, or commonly used now is the phrase environmental education for sustainable development (EESD). The mandates for addressing SD in education though cover a large number of the relevant sectors; including national curriculum, primary education, secondary education, higher education, non-formal education, civil society and community participation. However, mandates for ESD are not included for teacher training or the private sector.

Distribution of educational budget for the entire country is under the authority of the Ministry of Education, however there has been no specific funding allocated for ESD. Such prioritised subject funding is not a standard practice for educational budget allocation though. At some local levels, there has been limited support by the local Environmental Protection Administrations to specifically enable ESD teaching in individual schools. Since 2008, the Ministry of Environmental Protection has supplied 5 Million CNY (~790,000 USD) per year for the purpose of communicating on environmental education with a focus on supporting the activities led by CEEC. The private sector, i.e. businesses and companies, also provide a large portion of funding to CEEC to support their activities on environmental education and communication.

National Curriculum

The mandates for ESD now require its integration into the national curriculum in China. ESD inclusion is as an add-on topic in various subjects including biology, physics, history, geography and chemistry. This however means that there is no independent teaching of a distinct ESD component. The quality of how well ESD topics are brought into various subjects or disciplines depend on the expertise and understanding of ESD integration by those who are responsible for preparing the curriculums for each discipline, and of course is also subject to the expertise of those developing the text books for those subjects and the capacity of the teachers themselves. The “Curriculum Standard for High School” is to be revised in the near future, and it is expected that there will be further development of ESD overall integration into the curriculum at this time. The current achievement level in regards to the objectives for ESD implementation and integration that are detailed in the policy mandates for ESD is judged to be around 50%.

The inclusion of ESD as an add-on topic has occurred in a superimposed manner though rather than one supporting integration of ESD into existing educational practices. Due to this fact, ESD inclusion in the curriculum has not reflected or built on previous educational policies and strategies. However, the inclusion of ESD into the national curriculum has affected wider educational reform specifically in regards to strengthening teachers’ training in terms of progressive educational pedagogies and the application of learning methodologies such as action research and cooperative enquiry into classroom teaching. One such example is the “Environmental Educators’ Initiative” which is a program that has been supported by the Ministry of Education, BP and WWF-China which through the support of progressive teaching methods and pedagogies led to its inclusion in the act on China’s Curriculum Reform in 2001.

There has been coordinated support from researchers and experts to strengthen ESD integration into the curriculum. Between 1999 and 2003, when the National Environmental Education Guideline for Primary and Middle School was being developed, the draft version was shared with experts from the various disciplines to ensure appropriate curriculum standard development in relation to the incorporation of EE and ESD. Currently, a research program for Climate Change Education (CCE) is being undertaken with the support of UNICEF to provide strategic inputs for the upcoming curriculum standard revision.

The authority for ESD implementation is charged to both the Ministry of Education and the Office of Policy Reform of the National Development and Reform Commission (NDRC). Systematic reform of policy or mandates for ESD must be made by NDRC, but beyond that the Ministry of Education takes the lead role in actualising the national curriculum, teaching materials and textbooks, teachers’ education, higher education, and university entrance examinations. There is no established system for inter-ministerial cooperation or collaboration in regards to ESD policy formation or implementation. The National Environmental Education

Guideline for Primary and Middle School issued by Ministry of Education provides the clearest learning objectives/targets for ESD, these are: 1) to develop students' awareness and concern for environmental issues at all levels; 2) to help students gain the knowledge and skills to live in harmony with nature; 3) to promote learning of environmental friendly values; and, 4) to encourage students' participation and action in decision-making for sustainable development.

Formal Education

The application of ESD in formal education in China is regularly addressing sustainable consumption and production, indigenous knowledge-perspectives, cultural values and ethics (as linked to sustainable lifestyles, and the national development plans addressing sustainability. This includes 57% of the total topics that respondents were asked to consider in the country survey. ESD teaching is conducted through a disciplinary, topical and knowledge-based approach in China. Due to the disciplinary approach to ESD, it is possible to identify progressive learning objectives for ESD that develop grade by grade in the curriculum and course content, but these remain very closely linked to the progressive learning objectives established per each discipline.

Teaching materials for ESD are available among some schools, and though the government has developed specific teaching materials there are many areas of China that have not yet received circulation of these materials. The ESD teaching materials are mainly in the form of printed materials or inclusion in newer text books, but there is very little usage of multi-media formats for ESD teaching. As mentioned in the introduction, China has successfully developed a "whole-school management approach" which is promoted under their green schools project.

There are no specific practice standards or auditing mechanisms established for ESD. The main achievements so far have been in regards to knowledge-based learning which mainly aims to disseminate ideas of personal/individual sustainable development. This approach has been promoted by China's program under DESD through teacher training, local textbook development, and practice at the school level. The government's approach to ESD has not focussed on skill-based or value-based learning for sustainable development, but these are areas in which many of the NGOs in China have engaged.

Teacher Training

Currently, there is no official mandate for student teachers to receive training in ESD, but some of the teacher education institutes (TEIs) are already engaged in this practice. The main focus of this training is in regards to the country's national sustainable development plans, while the other important thematic topics

of sustainable development are not regularly addressed in teacher training nor is there any major focus on the innovative learning methodologies that are often viewed as a core aspect of ESD. The percentage of in-service teachers who have received ESD training is estimated to still be less 1% of the total number of teachers in the country, and there are no established mechanisms for teachers to share their good practices in ESD with one another.

Non-Formal Education

There are no specific agencies that are charged with the authority for promoting ESD in the non-formal sector. However, the Center for Environmental Education and Communications of MEP does take on some of this role, as also do the local-offices under CEEC. However, in regards to any materials for production/distribution, these must be issued by the Publicity Department of the Communist Party of China (CPC). There is no specific strategy outlining the objectives for non-formal ESD, but the general approach that is applied is through the usage of slogans (i.e. “Save the Water”) through multi-media dissemination. CEEC organises events once or twice a year to engage citizens in awareness raising and outreach about sustainable development issues.

Civil Society and NGOs

The government does provide support for civil society involvement in ESD. This usually occurs through the government identifying NGOs with similar interests/aims and common values on given issues, and then engaging the NGOs to support or implement a government supporting initiative. There are no formal multi-stakeholder networks or consortiums for ESD, but due to the fact that China has over 3,500 NGOs there are many who work on SD or ESD and often collaborate with one another. The wider variety of NGOs in China also leads to a wider coverage of the important thematic topics of ESD.

The Chinese government has been actively involved in international processes on ESD, such as the UN DESD and the RCE network. The government also provides good support for the usage of media technologies for ESD promotion including regular production of radio and television programs. In regards to planning for sustainable development, a mandate does exist for the inclusion of citizen participation in this process, however it is only engaged as deemed necessary by the government.

Private Sector

Partnerships have been established between government and the private sector to promote ESD. One example is the support HSBC has provided to the eco-school program established by the Foundation for Environmental Education and implemented in China by MEP. This project has a direct linkage to the Green School project with the best green schools becoming certified as internationally recognised eco-schools. There are no identifiable partnerships established between the private sector and consumers. Businesses do provide in-service training and continuous professional development in areas of environmental management and sustainable production. The government however does not engage with business leaders on SD training. There are a small number of companies in China that have established good practices in engaging with EE and ESD including Sino-Ocean Land, BP and Volkswagen.

Conclusion

China's engagement with ESD has a relatively long and active history when compared with other countries in Asia. Since the original calls in *Agenda 21* for education to become a vehicle for sustainable development, China has engaged with aspects of ESD, although most commonly only through its links with environmental education. The Green School project in China is an internationally recognised programme for its application of a whole-school approach to environmental management and education which has inspired the implementation of similar projects by other countries in the region. CEEC has initiated several activities to directly connect with individual citizens and advance sustainable consumption practices in their daily lives.

ESD implementation in China benefits from a focus on practical application of the concept, while the inclusion of ESD topics across many of the traditional teaching subjects has allowed for its consideration in many different areas of the curriculum. On the other hand, the lack of teacher training to support ESD implementation and its add-on nature that still mainly focuses on the environmental education aspects of SD do create significant limits to the overall quality and learning performance of the ESD that is being implemented. Although the whole-school approach has been piloted and embraced in the Green School project, this only covers a small percentage of all the school in China. This point about the replication and dissemination of effective approaches is very significant in China however because of the vast amount of schools, geographic areas, and students that have to be dealt with when trying to expand practice across the entire country. In fact, China has over 270 Million² children who are currently of school age population which is more than the combined amount in all the other countries included in this study. It is often the reality in

² Calculated from ESCAP (2010) Statistical Yearbook 2009 figures [Total Population] x [Proportion of Children as percentage of total population]; figures come from 2008; However, children are calculated as those aged 0-14, so there is some minor error in this as the ideal calculation would be from 4-16.

China that good educational practices develop in the coastal cities, especially Beijing and Shanghai, and from there it may take many years for such practices to fully spread across the country even though the national government has worked to ensure the local education authorities are quite strong throughout the country. Although ESD is supported by specific ministries and agencies, especially MEP and Ministry of Education, the centralised nature of policy in China and the lack of prioritisation of ESD by the stronger authorities has discouraged its wider funding and implementation.

ESD Implementation in JAPAN

Japan stands out as one of the leading supporters of the UN Decade of Education for Sustainable Development. It was based on the proposals made by the Japanese government and the Swedish government to the 57th session of the UN General Assembly in December 2002 that the resolution was adopted for the international implementation of DESD between 2005 and 2014. The Japanese government has also been the leading financial supporter for the decade through the Japan Funds in Trust which are allocated internationally by the Ministry of Education, Culture, Sports, Science and Technology (MEXT).

The national government of Japan has been very active in many sustainable development issues in line with the country's vision for achieving Low Carbon, Sustainable Society. Japan is a global leader in green market promotion in both domestic practice and international cooperation. In fact, the model approach first developed in Japan has been replicated and adapted to the contexts of several countries throughout East and Southeast Asia. Japan's policies for institutionalising green markets include the *Fundamental Law for Establishing a Sound Material-Cycle Society* (2000), the *Green Purchasing Law* (2000) and the *Green Contract Law* (2007). This approach worked first to develop the necessary infrastructures to support sustainable consumption and to improve the practices of public bodies to model best practice (Sato and Nakahara, 2011: 45-6).

Ironically though, the national curriculum does not actually call for the incorporation of education for sustainable development, rather it emphasises an educational process that helps achieve the realisation and creation of a sustainable society. Japan's Basic Plan for the Promotion of Education (2008) does highlight ESD as a critical component and calls for its integration into various subjects. There is also a call for inter-ministerial cooperation on ESD, and there is a call for the development and dissemination of an educational programme for ESD. Furthermore, the government recognises the UNESCO ASPnet (Associated Schools Project Network) and the Regional Centres of Expertise on ESD (initiated by UNU-IAS) as important centres for developing and promoting ESD. In 2006, the Japanese Cabinet Office prepared the Japanese Action Plan on DESD through an inter-ministerial process.

In formal education, one of the interesting issues is the strong curriculum divide that can be acknowledged where ESD is taught as environmental education in the natural sciences, while education for sustainable consumption (ESC) is taught as part of consumer education in home economics. Some schools or teachers do also choose to apply a more holistically oriented ESD as part of the open subject area Period of Integrated Studies (PIS). Anecdotally, it is often said that it is very difficult to move outside the framework of the core

traditional subject areas in Japan (and likewise in Korea) for better ESD integration due to overall focus of the education system towards preparing students for the very competitive university entrance exams.

National Curriculum

The lead authority for ESD implementation is MEXT, while the Ministry of the Environment (MOEJ) provides support for non-formal ESD and has also initiated a program to develop leadership on ESD in higher education. Educational policy and the national curriculum are under the authority of MEXT, though they are directly supported by their affiliated research institute, the National Institute for Educational Policy Research (NIER) who helps to develop the actual practical contents for the curriculum. It is desired that ESD is addressed in primary and secondary education, higher education, civil society, and the private sector. The government has also established a process for inter-ministerial coordination on ESD. Some academic societies including the Japan Association for International Education (JAIE) and the Japanese Society of Environmental Education (JSOEE) also promote ESD within the country.

Within the national curriculum, aspects of ESD are incorporated into disciplines and sustainability themes (i.e., environmental sustainability in natural sciences and sustainable consumption in home economics). Many ESD-oriented schools, especially public schools, make the most of 'integrated learning' hours for teaching on ESD practices. There are schools, though the number is limited, that attempt an 'infusion approach' with ESD integrated across the entire curricula. The ASPnet Schools are expected to take pioneering roles in the dissemination of ESD.

The identified learning objectives for ESD in Japan are: 1) to develop the ability to see through the essence of specific problems and the capacity to assess and critically evaluate these problems; 2) to be able to clearly express one's own feeling, thoughts, and ideas; 3) to accept and respect different values; 4) to work cooperatively with others; 5) to seek concrete solutions; 6) to understand environmental carrying capacity; 7) to imagine the ideal society and to implement spontaneously. Specific funding or support for ESD implementation at the school level is not provided in Japan as this is not appropriate to the standard allocation of school budgets in the country. ESD has not led to wider curriculum reform in Japan, however some of the best practices developed by the most exemplar schools for ESD teaching (especially those applying a whole-school approach) have gained notoriety.

Formal Education

Due to the fact that ESD in Japan is mainly applied through the diffusion of sustainability themes into traditional core subjects or voluntarily taught by schools or teachers in the period of integrated studies, ESD teaching is not guided by specific teaching strategies or progressive (per grade) learning objectives. Rather, any such strategies or learning objectives will be those tied to the core subjects. Also as such, there are few teaching materials developed that specifically address ESD, instead the sustainability themes are presented in teaching materials for the core subjects.

A limited number of schools in Japan have applied a whole-school management approach for addressing ESD. The ASPnet schools is one of the most active networks in applying such approaches, and although the affiliated ASPnet schools only number 459 as of July 2012 their best practices are often regarded as exemplars for ESD implementation in Japan. Furthermore, some local governments and school administrations have been very active in promoting ESD teaching in their schools. One of the more notable examples is from Kesenuma City in Miyagi prefecture where they have developed an environmental education for sustainable development approach for their elementary schools and have encouraged important engagement with the local community for hands-on, experiential education. A further example is from Okayama City where a strong partnership between education institutions, local government, businesses and civil society for ESD promotion led to it becoming one of the pioneer Regional Centres for Expertise (RCE) on ESD in 2005 (which is discussed further in the subsequent report on *Learning Performance Assessment in ESD*).

The general teaching approach for ESD in Japan is inter-disciplinary and practice-based, and it covers both topical issues and integration into core subjects. ESD teaching in Japan is not guided by practice standards or auditing mechanisms. Due to this fact and the nature of ESD teaching through the integration of sustainability themes into core subjects, it is very difficult to assess the major learning outcomes that have been achieved in Japan. It is also found that the main engagement with ESD is on knowledge transfer (rather than skill-based or value-based learning), and there is very little application of the progressive learning methodologies connected to ESD.

Teacher Training

There are no mandates for the inclusion of ESD training for student teachers or for in-service teachers. Generally, ESD in teacher training seems to be overlooked in Japan, but there are seven universities in Japan providing ESD training to students in their education faculties. These seven universities are all members

ASPnet university network (ASPUnivNet). The National Meetings for UNESCO ASPnet Schools also provide one of the few opportunities for teachers to share their good practices on ESD.

Non-Formal Education

The Ministry of the Environment (MOEJ) is the authority charged with promoting ESD in the non-formal sector at the national level. The environmental division of local governments are the parallel agency to MOEJ at the local level, but the promotion of ESD by local governments is inconsistent. Local environmental divisions often conduct non-formal education for environmental awareness, but those local governments specifically promoting ESD usually emphasise formal education. MOEJ's main strategy for ESD promotion in the non-formal sector is to develop networking of individuals and organisations for information exchange. Because the focus is on networking, there is no substantial application of learning methodologies to non-formal ESD.

Community and Civil Society

The Japan Council on the UN DESD (ESD-J) provides networking of NGOs involved in ESD and includes over 100 organisations and over 300 individuals. The government only provides moderate support for such ESD networks, however they do regularly open the opportunity for representatives from civil society to participate in government meetings on ESD. As a major international supporter of DESD, Japan is actively involved in international activities on ESD. Japanese ESD experts regularly attend meetings organised by UNESCO head quarters, such as the Monitoring and Evaluation Expert Group (MEEG). The Japanese National Commission for UNESCO is also actively involved in suggesting ESD strategies and actions at the UNESCO General Conference and other international meetings.

Private Sector

Business and business forums in Japan are active in providing in-service training and continuous professional development (CPD) on environmental management, supply chain greening and sustainable consumption and production for their employees. They are also active in consumer awareness raising initiatives on greener/sustainable consumption, eco-products, efficient products, etc. However, there are no clear examples of the government actively cooperating with the private sector to promote ESD activities. As an innovative example, the Education for Sustainable Development Research Centre (ESDRC) of Rikkyo University organises activities focussed on CSR and ESD, and they work to advance approaches for 'Sustainable Education' in the private sector.

Conclusion

The strong uptake of ESD in Asia and globally owes significant credit to the support and encouragement the Japanese government has provided for the enactment and implementation of the UN DESD. From this international perspective, Japan stands out as a clear leader in the promotion of ESD. Within Japan, there have been numerous efforts to be involved in the international implementation of ESD and to develop best practice models for ESD implementation. This includes the large number of UNESCO Affiliated School Project (ASPnet) members in Japan, the participation of several Japanese universities in the United Nations University Institute of Advanced Studies (UNU-IAS) “Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net)”, and also the six UNU-IAS initiated Regional Centers of Expertise (RCEs) on ESD.

Domestically, there are many exemplar models of ESD implementation being developed in Japan, and ESD implementation is occurring across all major sectors reviewed for this study. However, when we move beyond these models of best practice and consider the usual implementation of ESD in Japan across the majority of schools, there are discrepancies between the typical implementation and the highlighted implementation of the model schools. The standard approach for formal education is to select certain thematic topics of sustainable development and to insert them into traditional subjects, specifically sustainable development is addressed as part of environmental education and sustainable consumption is addressed as part of home economics/consumer education. Besides this inclusion of knowledge based learning though, there has been a conflict to reform the education systems to provide a more integrated and holistic approach for ESD due to the strong focus on rote-based learning to prepare students for entrance examinations. Furthermore, as there is no clear mandate for TEIs to provide teacher training on ESD, there has been little capacity development on the progressive learning methodologies of ESD.

The type of whole-school, holistic ESD approach that might be expected from one of the leading global promoters of ESD is only really found in some of the ASPnet schools in the country. With this said though, this situation and the approach of inserting specific SD topics into the traditional subjects as the mainstay of ESD implementation is quite similar in several of the countries reviewed in this study, and in this way Japan’s implementation of ESD across the formal education system is rather comparable to the basic implementation in many countries. The point is highlighted in regards to Japan’s current implementation status because it seems surprising that the country that has been at the forefront of ESD promotion is not further advanced in its practice of adopting progressive methodologies or holistic ESD approaches compared to the other countries reviewed (and in no is way suggesting a qualitative lack of implementation).

One important area for ESD practice in Japan is in higher education. This sector was not included in the survey and reporting for this research, however it is worth noting Japan's extensive efforts in improving ESD at both university and graduate level. MOEJ initiated the "Environmental Leadership Initiatives for Asian Sustainability (ELIAS)" since 2008 to develop both bachelor and master level courses on sustainable development in Japanese universities. MOEJ has also been an active supporter of the UNU-IAS led ProSPER.Net, and half of the overall 22 member universities of ProSPER.net are Japanese institutions.

ESD Implementation in MALAYSIA

The National Policy on the Environment by the Ministry of Science, Technology and Innovation is one of the plans addressing sustainable development in Malaysia, and it calls for the promotion of SD through education. The country also has a series of systematic plans for development that have been a driving force in policy since the formulation of the five-year national development plan in 1956. Malaysia has a three-tiered cascading planning framework for development, with the five year plan as the medium term of this framework. The Outline Perspective Plan (OPP) provides a long term plan which guides the national agenda and this has always recognised education as one of the main mechanisms for achieving progress in the country. Furthermore, the development of human resources has always been considered an essential factor for the country's development (UNESCO, 2011: 20-21).

In 2001, the Ministry of Education launched the Education Development Plan (2001-2010). This plan reflects the goals of the National Vision Policy, the OPP3 and the Malaysia Development Plan. This plan provided substantial calls for ESD implementation, and was based on four main thrusts: to increase access to education, to increase equity in education, to improve the quality of education, and to improve efficiency and effectiveness of educational management (UNESCO, 2011: 20-21). This provided a strong link between the country's development plans and its educational objectives.

The mandates for ESD cover 80% of the core sectors, except for teacher training in either TEIs or in-service training. ESD implementation is jointly managed by the Curriculum Development Division of the Ministry of Education and the Department of Environment of the Ministry of Natural Resources and Environment. However, there is no specific budget allocated for ESD implementation. The strongest policy mandate for ESD is closely linked to environmental education and the National Policy on the Environment (launched in 2002).

National Curriculum

In the national curriculum, ESD is infused in primary and secondary children through "Environmental Education across the curriculum". As such, it is not taught as a single subject but infused and integrated in the relevant subjects (such as English Language, Malay Language, Geography, Science, Local Studies, Civics and Citizenship). It is also infused through co-curricular activities.

The national curriculum also provides clear learning objectives. First, to establish a clean, safe, healthy and productive environment for present and future generations. Second, to conserve the country's unique and diverse cultural and natural heritage with effective participation by all sections of society. Third, to promote sustainable lifestyle and patterns of consumption and production. There is not a clear path for decentralising ESD from the curriculum to the classroom, but efforts are made to provide proper communication to those who are responsible for implementing ESD.

Formal Education

ESD is not framed by either specific teaching strategies or progressive learning objectives in Malaysia. Therefore to aid teachers in disseminating knowledge related to Environmental Education, guide books on integrated ESD teaching are distributed to school teachers. Innovative learning methodologies are however applied for ESD teaching in Malaysia. There are also 125 pilot schools, or 1.25% of the total schools in Malaysia, that are applying whole-school management approaches for promoting ESD. Some of the school administrations provide additional support for ESD through encouragement of extra-curricular activities and by taking part in competitions.

All of the major ESD topics are addressed in formal education except for national SD plans. The majority of schools have ESD teaching materials, but they do not utilise multi-media formats. The standard approach to ESD in Malaysia is disciplinary based, integrated, and knowledge-based. Generally speaking, students gain a basic understanding about the eco-system, environment and basic sustainable development topics on those aspects that can be embedded in traditional disciplines. Although there are not set practice standards for ESD teaching, there are auditing mechanisms in place for it.

Teacher Training

Although Malaysia does not have a clear mandate for students teachers to receive ESD training, it is taught by all 27 teacher education institutes in Malaysia. Student teachers receive training on all major ESD topics except for mitigation and adaptation, and they also receive the opportunity to interact with SD experts and professionals to gain knowledge and inspiration. TEIs are also providing training in innovate learning methodologies. For in-service teachers though, there are no established mechanisms for sharing good practices in ESD.

Non-Formal Education

At the national level, the Department of Environment under the Ministry of Natural Resources and Environment is charged with the authority for implementing non-formal ESD. The Departments of Science, Technology and Innovation in the local governments support non-formal ESD at the local level. These activities are guided by the vision to achieve a deeper and better understanding of the concepts of environmentally-sound, sustainable development and a caring attitude towards nature, thus environmental education and awareness will be promoted across the board, incorporating information dissemination and training. The methods commonly applied are campaigns, talks and media advertisements.

Civil Society and NGOs

The government of Malaysia cooperates with and supports civil society organizations in programs such as waste reduction and recycling campaigns. The NGOs in Malaysia address SD issues including climate change, disaster risk reduction, mitigation and adaptation, and sustainable consumption and production. At an international level, cooperation on ESD happens with agencies such as UNESCO, the Japan International Cooperation Agency (JICA), and the World Wide Fund for Nature (WWF). Media technologies are regularly used for promoting ESD, and the government especially supports advertisements and community service messages.

Private Sector

The private sector's main engagement with ESD in Malaysia is to provide consumer awareness raising on sustainable consumption options. Linking to the government's efforts for waste reduction, the private sector has started to promote a "no plastic bag" campaign. The shops and companies have agreed that every Saturday they will not give away plastic bags for free. Plastic bags can be bought on Saturday, but the hope of course is that more people will start to carry reusable bags. Several major companies have also been active in greening the manufacturing, production and service provision processes.

Conclusions

Malaysia places a high priority on improving the quality of education as a foundation of the country's overall development. Human capital development is viewed as being the new wealth for the nation and creating the capacity for its pursuit of sustainable development that supports balanced economic, political, social, spiritual and cultural development. However, to achieve these lofty goals, there are many challenges across all of these sectors that will need to be addressed in a holistic and integrated manner. ESD is recognised as

the method for engendering the knowledge, skills and values that will allow the country to continue planning their development in a comprehensive and systematic manner that can find opportunity out of the challenges and ensure the achievement of their long-term development goals.

Similar to many countries, the Malaysian approach to ESD implementation has evolved from their earlier efforts with environmental education. Utilising the ESD implementation approach of embedding SD thematic topics in traditional subjects, ESD has expanded well beyond the natural science disciplines and is included in local studies, civics and citizenship, geography, and language studies, along with being an important theme of co-curricular activities. Work is also now be undertaken by the Ministry of Education to develop an environmental education policy that will strengthen better inclusion of ESD from an EE perspective.

ESD Implementation in The PHILIPPINES

The Philippines has a long and active history with sustainable development. In fact, it is possible to trace the roots of these practices back sixty years to the founding of the Philippine Rural Reconstruction Movement (PPRM) in 1952. The PPRM was established to strengthen the capacity of rural communities in planning and implementing their own development activities. The current vision of PPRM holds equity and sustainability as the main principles to guide these development activities, and to strengthen local activities an integrated program is provided that addresses education, livelihoods, health, habitat, environment and self-governance.

The Philippine Government enacted in 1989 the Philippine Strategy for Sustainable Development (PSSD). At the same time, the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resource (DENR) was requested to prepare the National Strategy on Environmental Education, and later a National Environmental Education Action Plan Framework (NEEAP) was developed for 1992 to 2002. Following the Rio Earth Summit in 1992 and the promotion of Agenda 21, the government established the Philippine Council for Sustainable Development (PCSD) to provide inter-agency coordination of the principles of sustainable development in the national policies, plans and programs. Following the Agenda 21 process, the country adopted the Philippine Agenda 21 in 1996 as the national blueprint for sustainable development. This was updated and elaborate in 2009 as the Enhanced Philippine Agenda 21 to provide more focused programme thrusts on eradicating poverty, managing globalisation, achieving social equity, securing peace and solidarity, maintaining ecological integrity and promoting empowerment and good governance.

The mandates for sustainable development in education were strengthened with the release of the National Environmental Education Action Plan for Sustainable Development for 2005 to 2014, which was prepared to specifically coincide with the UN Decade of ESD. Starting in 2010 and coinciding with the change of the administration for the UNESCO National Commission of the Philippines, efforts were taken and a series of orders were decreed by the Department of Education (DepEd) to strengthen the inclusion of ESD and climate change education through the national curriculum for all grades. This process was conducted with consultations between the UNESCO national commission, DepEd, the PCSD, and EMB-DENR to ensure effective harmonisation and cooperation on ESD implementation. Through these consultations, it was decided that the overarching framework for ESD would be the Enhanced Philippines Agenda 21 to achieve an environmentally-literate and proactive citizenry instilled with a sense of responsibility to care, protect and enhance environmental quality that is conducive to their well-being, supportive of the nation's economic

development, and unified in its pursuit of peace, social justice and equity in the use of its natural resources. While the overall direction of ESD should promote sustainable livelihoods and responsible citizenship.

ESD is mandated across 90% of the sectors covered in the survey; the only area not included is the private sector. The National Environmental Awareness and Education Act of 2008 reiterated the importance of inter-agency cooperation and shared responsibility in regards to environmental education and ESD. In formal education, budget is not specifically provided for ESD as schools do not receive subject specific funding, but in non-formal education there is specific budget allocation for ESD activities. The Sustainable Environmental Education project (SEED) receives an annual budget of 350,000 PHP (approximately 8,400 USD).

National Curriculum

The main approach for ESD integration into the national curriculum of the Philippines is to mainstream ESD topics into the traditional subjects, and ESD's inclusion into the curriculum builds on previous educational policies and strategies. ESD is especially addressed in science courses, Good Manners and Right Conduct (GMRC) components, health studies, and Technical Livelihood Education (TLE). Currently, it is estimated that around half of the objectives set out in the mandates for ESD are being achieved.

At the national level, there is a Coordinating Council for ESD made up of: 1) Department of Education (DepEd), 2) Commission on Higher Education (CHED) – Teacher Education Institutions, 3) Technical Education and Skills Development Authority (TESDA), 4) Local Government Units, 5) Department of Environment and Natural Resources, and 6) NGOs. There are also inter-agency committees at sub-national level on environmental education to also ensure coordination. ESD's integration into the curriculum has drawn on the international research and expertise on ESD, and the identification of the knowledge, skills, and value-sets linked to ESD provides clear support for topical inclusion of ESD in the core subject.

Formal Education

ESD inclusion in formal education is linked to progressive, per-grade learning objectives, while the main topics addressed under ESD include climate change, disaster risk reduction, indigenous knowledge, and national plans for sustainable development. There are some pilot schools applying whole-school management approaches in relation to ESD. School boards provide general support for ESD implementation, but it is the individual schools' administration that provides the main supervisory role for ESD implementation in the specific schools.

ESD teaching materials in the Philippines do include multi-media formats, and the ESD teaching process applies innovative learning methodologies. The main approach for ESD teaching is interdisciplinary with integration into the core subjects of the curriculum and aims to provide a practice-based orientation to learning. The Philippines was one of only two countries (the other being Thailand) to respond that there are identifiable links between the implementation of ESD in formal education and students' behaviour change, although no specific examples are provided.

Teacher Training

ESD training is mandated for teacher training, but is mainly taught in regards to its inclusion in the "specific topic course" curriculum. Currently though, most of the TEIs are providing ESD training but not all of them. The topics being covered by the TEIs include climate change, disaster risk reduction, mitigation and adaptation, and indigenous knowledge. Student teachers are receiving opportunities to interact with and be inspired by sustainable development experts and professionals.

Non-Formal Education

The Department of Environment and Natural Resources is the lead authority for implementing ESD in the non-formal sector. The implementation of non-formal ESD is guided by the National Environmental Education Action Plan, and there is a clear strategy for non-formal ESD based on three objectives. The first objective is to identify the issues about the environment in the local community. The second objective is to provide information for members of the community about the environment, and how it could be preserved and enhanced. The third objective is to establish opportunities for community members to actively engage in helping the community solve environmental problems. The main learning methodologies that are used include: 1) active learning and teaching strategies (including life-skills approaches and the 4As: Aspire, Audit, Adapt, Action); 2) radio-based instruction; 3) independent learning; and 4) one-to-one instruction.

Civil Society and NGOs

No information regarding ESD in the civil society and NGO sectors was available.

Private Sector

The government and the private sector have been cooperating on the provision of ESD. Both the Pollution Control Association of the Philippines, Inc. and the Philippine Business for the Environment organisation work closely with the government. The government also supports training on sustainable development for business leaders, for example the ASEAN+3 Leadership Forum on SCP in 2010.

Conclusion

The Philippines has actively incorporated sustainable development into national planning and development activities. The Philippines Agenda 21 and the subsequent Enhanced Philippines Agenda 21 provides the main mandates for sustainable development and have encouraged its implementation at all levels of government including a strong emphasis on public participation at the local level. Coinciding with this, the Philippines has also promoted environmental education and ESD as key factors in encouraging a proactive citizenry that can help achieve the realisation of a sustainable society.

The fact that the Philippines created a specific education action plan to correspond with the UN Decade of ESD is unique and shows a strong commitment to achieving the goals of DESD in the Philippines. The Coordinating Council for ESD provides a clear mechanism for inter-agency collaboration and multi-stakeholder participation in the implementation of ESD. Except for the whole-school management approach applied in some pilot schools though, the main application of ESD singularly aims to include sustainable development thematic topics into the traditional subject areas. Under this approach, only 57% of the identified ESD priority topics are addressed in formal education. The expansion of multiple approaches for ESD implementation could lead to better coverage of the priority ESD topics, although as the Philippines does have progressive learning objectives for ESD it is also feasible that some strengthening of these objectives could achieve the same impact.

ESD Implementation in REPUBLIC of KOREA

In 2008, the government of the Republic of Korea announced a Low Carbon, Green Growth Strategy as a new vision for nation's long-term development. This was followed by the launch of the Five-Year Plan for Green Growth in 2009 to serve as a medium-term plan for implementing the National Strategy for Green Growth over the period 2009-2013. All aspects of sustainable development and ESD have become closely linked to the Green Growth strategy since its formation. Prior to this, the country had established a National Sustainable Development Plan in 2005 and a National Strategy for Sustainable Development in 2006 which included specific calls for ESD. In 2007, ESD was included as a theme for cross-cutting learning. This also builds on Korea's long history of implementing environmental education (EE) and the expansion of the delivery of EE under the Master Plan of EE Development, launched in 2006.

There are three major committees in Korea that influence the implementation of ESD in the country: the Presidential Committee on Green Growth, the National Council for Sustainable Development under the Ministry of Environment, and the Korean National Commission for UNESCO. Mandates for ESD cover half of the relevant sectors, but mandates are not included for ESD in non-formal education, teacher training, private sector or community participation. Both the Ministry of Education, Science and Technology (MEST) and the Ministry of Environment are charged with funding distribution for ESD, and funding support for ESD is applied across all sectors. Funding is allocated to schools for ESD activities; for example, in 2011, a total of 48M won (~\$41,000 USD) was distributed to support EE programs, and an additional 8M won for environmental experiential activities.

National Curriculum

Through the Seventh Curricular Revision (2008), MEST provided guidelines to cover themes related to sustainable development and the environment in middle and high schools, while also rooting green growth into the national curriculum. The Seventh Curricular Revision further included 'creative experiential learning activities' that cover a wide range of learning themes on sustainable development. The Korea Institute of Curriculum and Evaluation is charged with the task of integrating ESD into the curriculum and into teaching materials, while the Board of Education is charged with providing in-service teacher training on these matters.

It is estimated that ESD implementation has achieved less than 20% of the objectives detailed for it in the previously mentioned development strategies. The main learning objective for ESD is to foster global

environmental leaders and environmental-friendly citizens. It is seen though that ESD has provided a movement for educational reform that has subsequently led to the inclusion of approaches for green growth education in the curriculum.

Formal Education

ESD in Korea is framed around a project-based approach as its key teaching strategy which is mainly related to convergence education. There are not progressive learning objectives for ESD teaching, but both the use of innovative learning methodologies and multi-media teaching materials are found. The major topics being addressed by ESD are climate change, sustainable consumption and production, Indigenous knowledge, cultural values and ethics (linked to sustainable lifestyles), and the Green Growth national development plans .

There are now 28 pilot Green Schools in Korea (as of 2011). There is a strong understanding of learning targets and achievements based on the division of knowledge-based, skill-based, and value-based learning. In regards to knowledge, students are learning about climate change and related environmental issues. In terms of skills, the aim is to encouraged cooperation with other students and individuals. While value-based learning is to provide an orientation towards sustainability.

The school boards and school administrations are supporting ESD through in-service teacher training. The Seoul Board of Education and the Gyeonggi-do Board of Education are notable for the efforts in in-service training on ESD. School administrations may provide support in other ways besides teacher training; such as hosting ESD related lectures and workshops and also by providing SD administrative training for principals and vice-principals.

Teacher Training

Some of the Teacher Education Institutions (TEIs) in Korea are providing ESD training, but there is no specific requirement by the government to do so. The TEIs are addressing the same ESD topics covered in formal education, and they also address disaster risk reduction. Furthermore, the TEIs are providing training in innovative teaching/learning methodologies.

It is estimated that less than 5% of in-service teachers have actually received training on ESD. For knowledge sharing on ESD good practices, the Ministry of Environment regularly holds relevant conferences for teachers, though more often related specifically to environmental education or education for international

understanding than ESD. There are also additional activities on ESD that take place linked to both the Tongyeong Regional Centre of Expertise (RCE) on ESD and for the UN DESD by UNESCO.

Non-Formal Education

There are approximately 688 environmental centres in Korea that support environmental education activities. At the national level the Korean Commission on Sustainable Development in the Ministry of Education and the Presidential Committee for Green Growth are both responsible for implementing non-formal ESD. Local governments implement non-formal ESD in response to Local Agenda 21. The objective of non-formal ESD is to help foster environmentally friendly citizens. The main methods used in this sector are campaigns, symposiums, awards, colloquiums, and certification programmes. From 2011, the Ministry of Environment intends to establish regional learning centres for EE and for publishing materials for each class of citizens (i.e. children, housewives, business employees, soldiers, etc.).

Civil Society and NGOs

There are several multi-stakeholder networks promoting ESD in Korea; including Korean Environmental Education Networks, RCEs on ESD, Local Agenda 21 partnerships, and University Green Campus network. There is good government support and cooperation with civil society and NGOs, especially at the level of local governments. At the local level, citizen participation in SD planning is frequently engaged. The NGOs in Korea cover all of the major SD themes. There is good use of media technologies for SD awareness raising; including public information museums among several others and these are actively supported by the government. There is also regular cooperation in international ESD activities from this sector.

Private Sector

The private sector in Korea is actively engaged with supporting Green Growth and ESD in the country. Several major corporations have helped to fund education for green growth initiatives. Some have also supported Green Growth teacher training programmes. Businesses are also promoting green growth within their companies and providing in-service training and professional development for their employees. Furthermore, leading Korean companies also actively engage in consumer awareness raising on sustainable consumption and eco-products.

Conclusion

The promulgation of the Green Growth concept as Korea's main pursuit of SD has strengthened and redirected the implementation of both developmental and educational activities for sustainable development. Korea is increasing its international presence on SD through the promotion of green growth and green economy. Both EE and ESD are also being refocused to better support the principles of the new national development agenda through green growth education.

However as green growth mainly provides a tool for greening economic activities, or integrating environmental concerns into economic activities, it lacks clear consideration of social issues and more specifically the individual's relationship to sustainable development issues. Thus, if green growth education is to replace the coverage of ESD in terms of the country's curriculum, it is important to further review to what extent the social attributes of SD are addressed. Currently, the main focus of ESD though comes from an evolution of earlier EE practices, so even now ESD implementation maintains a more natural science orientation. It should also be noted that although the curriculum includes specific environmental courses, these courses remain optional and their selection rate is often low as these are not subject areas that prepare students for the contents of university entrance examinations (Choi and Im, 2009: 99).

Teacher training on ESD is well supported in Korea, but especially notable is the efforts to support in-service training that is implemented by both local school boards and individual school administrations. Furthermore, the Ministry of Environment provides important opportunities for teachers to share good practices on ESD. Another sector in which impressive progress has been made in Korea is through civil society and NGO support for ESD; as a strong civil society has been a leader of the environmental movement in Korea for multiple decades and is now providing support for ESD. Under the sustainable development agenda, there had also been numerous opportunities for public participation in planning, and although this has lessened under the green growth agenda it still continues to an extent at the local level. Finally, the idea of green growth education has opened up an area in which the private sector is eager to engage.

ESD Implementation in THAILAND

The sustainable development agenda in Thailand is guided by the nation's own unique concept of sufficiency economy. The "Philosophy of Sufficiency Economy" has been promulgated and led by the current king of Thailand, His Majesty Bhumibol Adulyadej, since he first introduced the idea of sufficiency during his birthday speech in 1974. It was following the Asian financial crisis of 1997 which severely impacted Thailand that the country turned to the philosophy of sufficiency economy as its new development path (Krongkaew, 2003). Since 2002, when the 9th National Economic and Social Development Plan (2002-2006) enshrined the development principles in the philosophy of sufficiency economy, Thailand has pursued a sustainable development path guided by its own national contextualisation of a pathway to a sustainable and sufficient future.

The current 11th National Economic and Social Development Plan (2011-2016) further enhances this approach towards "adhering to the Philosophy of Sufficiency Economy and that it should be applied to all parties at all levels. Development of people, society, economy, environment and politics are integrated holistically to increase Thailand's capacity for resilience and adaptation including at the level of the family, community and the nation. People-centred development and participation are applied throughout the national development process" with the vision of achieving "A happy society with equity, fairness and resilience" (as translated by Thai survey respondents from the Ministry of Education). The Philosophy of Sufficiency Economy provides a framework for a holistic development pathway based on finding a "middle path" between rapid economic growth and self-sufficient communities. In this manner, sufficiency economy is not akin to self-sufficiency, but there is an aim to achieve economic activity that is controlled by a sense of moderation and contentment while also aiming to strengthen the capacity and immunity of all levels of the country to cope with shocks from both internal and external shocks.

The education system in Thailand is guided by the National Education Act of B.E. 2542, passed in 1999. In 2002 the Act was revised to include a focus on the King's Philosophy of Sufficiency Economy, specifically for education to address: 1) stresses the middle path, 2) sustainable development and proper well-being for Thai people, and 3) balanced development. "[T]here has been a systematic attempt to integrate the Sufficiency Economy thinking into the school curriculum at every level. The aim is to teach children from an early age how to be self-reliant and live a balanced life so that they can contribute to society and cope with changes in the globalized world" (UNDP, 2007: 67). Furthermore, in the 2002 revision of the National Education Act, Chapter 4 on the National Education Guidelines states that education in Thailand should emphasise, "Scientific and technological knowledge and skills, as well as knowledge, understanding and

experience in management, conservation, and utilisation of natural resources and the environment in a balanced and sustainable manner” (Section 23, as referenced by survey respondents).

Education for sustainable development coverage, through the framework of sufficiency economy, is mandated across 40% of the surveyed sectors including national curriculum, primary education, secondary education, and non-formal education. Budget allocation is specified for ESD in primary and secondary education, however no specific information in regards to the amount of budget was available. There are a variety approaches to the distribution of ESD funding to individual schools, but it depends on which agencies the schools are under the jurisdiction of. There are four main agencies (all under Ministry of Education) depending on schools jurisdiction: Office of the Basic Education Commission, Office of the Private Education Commission, Office of Non-Formal and Informal Education, and Office of the Vocational Education Commission. While some schools fall under the jurisdiction of the Local Authority Office of the Ministry of Interior. However, schools could initiate ESD projects collaboratively with any combination of the above agencies or with other ministries. Finally, the Office of the Basic Education Commission is authorised to advocate, follow up and monitor the progress of ESD implementation in Thailand.

National Curriculum

The inclusion of ESD into the Thai National Curriculum has built on previous educational policies and is integrated into educational strategies in five distinct ways. The first approach is the inclusion of sustainable development contents into the eight main subject areas of the curriculum. The second approach aims for student character development that encourages sufficiency lifestyle and public mindedness. The provision of specific project-based learning activities is the third integration approach; this includes examples such as natural preservation and environmental clubs and camps. The fourth approach is the inclusion of additional ESD-specific learning modules, such as renewable energy or the philosophy of sufficiency economy. The final way in which ESD can be integrated into the curriculum is through the allocation for locally-based, school curriculum up to a 30% inclusion rate of the entire curriculum taught by the school. This decentralised development of school curriculum allows for the opportunity to address issues pertinent to the local context which can include many issues regarding sustainable lifestyles or livelihoods and sufficiency economy.

Regarding the inclusion of sustainable development contents into the 8 main subject areas, there is clear identification of both content topics and learning standards in the core subject areas that directly relate to ESD. In the science subject area, there are four relevant stated content topics: 1) living things and life existence processes, 2) life and environment, 3) energy, and 4) evaluation of earth. In the subject area of social studies, religion and culture, there are two important content areas: economics and geography. The

economic contents are also guided by the learning standard: to understand and be able to administer and manage resource production and consumption, utilisation of limited resources available, as well as practice the King's sufficiency economy. For geography, one of its learning standards states: to understand inter-relationship between human beings and their physical environment for consciousness of resource and environmental preservation for sustainable development. A final example comes from the career and technology subject area, under which one of the contents is living and family life which includes the learning standard: to understand, creatively think, acquire skills and consciousness concerning utilisation of natural resources and environment involving household chores, agriculture, crafts, creative work and business. In the classroom, the teacher will develop the lesson plan that is thematically interdisciplinary; for example, the philosophy sufficiency economy is a theme in whole school approach from early grades to the highest grade in school that is linked to standards in the curriculum.

The inclusion of ESD in the curriculum has affected wider educational reform. Specifically, ESD has encouraged more practical and holistic learning methods, and it encourages cooperative learning across multiple stakeholders. Furthermore, ESD is also understood as a means to effectively promote lifelong learning by cultivating an interdisciplinary approach and by encouraging development practices that raises the understanding of responsible citizenship for a sustainable society. The Second Decade of Thailand Education Reform covering 2009 to 2018 identified a key focus on Learner Quality Development, which is to meet the learning objectives of developing skills and capacities for students to apply sufficiency economy principles to their own ways of life and to achieve sufficiency lifestyles.

There are clear structures for inter-departmental cooperation on ESD implementation, and there is active engagement in international cooperation on ESD. There are also good paths for decentralising ESD from the curriculum to the classroom, and ESD is communicated to those who have responsibility for its implementation. Curriculum development is effectively supported by ESD research and expertise. Many ESD approaches were piloted in whole-school approaches and model schools with support of Ministry of Education, Ministry of Natural Resources and Environment, UNESCO, ACCU and UNICEF. Based on the lessons learned and best practices from these pilot schools, certain ESD strategies have since been integrated into the national curriculum. One such example is the "child-centred learning process: experiential learning and critical thinking" which was originally developed in pilot schools. The process of local curriculum development by schools is conducted as a participatory process which is based on identifying the needs of the local community.

Formal Education

The implementation of ESD and the philosophy of sufficiency economy in formal education are guided by specific teaching strategies and educational theories, especially experiential learning, active learning and community-based learning. There are progressive, per grade learning objectives that are linked to gaining knowledge and competencies about sufficiency economy and sustainable development. There are multiple pilot school models applying a whole-school management approach; these pilot schools have been supported by both the Ministry of Education and the Ministry of Natural Resources and Environment and they include sufficiency economy schools, eco-schools, and environmental education schools.

Both local school boards and school administrations support ESD implementation. The school board and community work together to develop ESD learning opportunities that relate to the local context and community. This usually focuses on strengthening students' ability to understand local issues, investigate local challenges and present with confidence their findings and recommendations. School administrations provide "teacher as learner", "learning by doing" and "participatory implementation" workshops. They also provide support for teacher teamwork in whole school implementation process; including lesson plans, follow up, monitoring, reflection and feedback. Further efforts are taken to build a "community of practice" within the schools.

The majority of the main thematic topics of ESD are covered by the education system in Thailand. Mitigation and adaptation is the only thematic area that does not receive coverage in formal education. The teaching approach for ESD is mixed, and both disciplinary and interdisciplinary teaching is provided along with both knowledge-based and practice-based learning approaches. The major learning outcomes for the current teaching of ESD include knowledge-based, skill-based and value-based achievements. For knowledge-based learning, the outcomes include competencies regarding local context, indigenous knowledge, local wisdom and culture, children rights, natural resources and local ecology, local issues and global issues, and languages. For skill-based learning, outcomes support the students' presentation skills, critical thinking, teamwork and group work, foundation of language skills, reading speaking, writing, listening, planning skills, and monitoring. Finally, for value-based learning, learners gain appreciation in regards to their sense of responsibility and respect, Thai-ness, self-esteem, equity, self-discipline, positivity, active learning, self-motivation, and confidence.

Teaching materials on ESD and sufficiency economy are available in all schools in Thailand. Access to these learning materials is widely available to the use of multi-media and electronic formats that include electronic files to support lesson plan development, e-books, e-learning programs, animation, educational television programmes, and video recording. Finally, some notable behaviour changes in students can be linked to the

implementation of ESD in Thailand. One of the early activities when ESD first started was teaching on waste management, and today both students and schools are active in continuing waste management and recycling activities. The learning teachers gained from awareness of the Convention on the Right of the Child and Child Right Based Education has increased their capacity and has since been adapted into whole-school activities. Lastly, as students have experienced active learning and learning by themselves especially in relation to their own local context, they have gained a greater eagerness for learning and a greater appreciation for their local community.

Teacher Training

There was only limited information on ESD in teaching training available regarding the mechanisms established for teachers to share good practices in ESD. Training of trainers programmes have been conducted on ESD, environmental education, and youth camps. Workshops have been held on rights based education, knowledge management, environmental education, ESD, citizenship, and democracy. Further workshops have been held specifically on sharing best practices in environmental education among Thai teachers. As with all countries included in this report, there is no process for teacher assessment regarding the quality of their ESD teaching set in place in Thailand.

Non-Formal Education

The Office of the Non-Formal and Informal Education (ONIE) of the Ministry of Education is the primary authority charged with implementing non-formal ESD, while it is supported by other departments of the Ministry of Education. There are 7,409 community learning centres in Thailand that are under the authority of ONIE that can be utilised for the provision of non-formal ESD. The objective for the provision of non-formal and informal education is to equip learners with the knowledge and skills needed to have ability for self-reliance and quality of life improvement.

The provision of educational activities by ONIE always relates to sustainable development, and every sub-district in Thailand has a community learning centre focussing on the Philosophy of Sufficiency Economy. ONIE prepares non-formal education courses and curricula. Effective implementation of ESD is ensured by following the contents and activities outlined in the curricula which are taught by the community learning centres across the country.

Civil Society and NGOs

A few of the important agencies supporting multi-stakeholder partnership for ESD in Thailand are the Kenan Institute, the Thai Environment Institute, Plan International, and Right to Play. NGOs in Thailand are supporting the coverage of all major ESD topics. Thailand is involved in international activities on ESD including UNESCO Associated Schools Project Network (ASPnet), an ESD pilot project and a rice project led by the Asia-Pacific Cultural Centre for UNESCO (ACCU). The Office of the Basic Education Commission also supports dissemination of ESD through media technologies, and ESD is promoted on Teacher TV.

Private Sector

The private sector in Thailand also provides support for ESD activities. Businesses are providing in-service training and continuous professional development for their employees on environmental management, supply chain greening, and sustainable consumption and production. Businesses are also providing consumer awareness raising initiatives on sustainable consumption and eco-products. Several companies have developed innovative examples for engaging with ESD activities in the country including Honda, Toyota, Bank Krung Thai, Siam Commercial Foundation, Matichon Newspaper, and Bridgestone Group Thailand.

Conclusion

Thailand is developing a unique approach to ESD guided by the country's own national vision for sustainable development, specifically the Philosophy of Sufficiency Economy. The national conviction supporting this philosophy has led to strong integration of an ESD approach to education in Thailand. This ESD integration is conducted in a variety of ways from the more standard approach of including sustainable development themes into traditional subjects to the more progressive approach of allowing up to 30% of the curriculum to focus on local issues and problem based learning around practical community and development issues.

Thailand's implementation of ESD in regards to its inclusion in the national curriculum and its application in formal education are especially notable. There were multiple questions for these two sectors where Thailand was one of only two countries to respond positively. This includes specific budget to schools for ESD, the inclusion of ESD building on previous educational policies, a clear path for decentralising ESD from curriculum to classroom, ESD guided by specific educational strategies, and identifiable links between ESD and students' behaviour change. The number and variety of pilot schools in Thailand along with the incorporation of best practices from these pilot schools to the wider curriculum and education system is another notable feature for ESD in Thailand.

TABLE 1: NATIONAL POLICY AND BUDGET FOR ESD

	Cambodia	China	Japan	Malaysia	Philippines	Republic of Korea	Thailand
National Plan for Sustainable Development	Yes	Yes	Yes	Yes	Yes	Yes	The Philosophy of Sufficiency Economy parallels SD in Thailand, and it is promoted in the 9 th , 10 th & 11 th National Economic and Social Development Plans.
SD plan includes ESD	Yes	Yes	Yes	Yes	Yes; The Philippines also have a National Environmental Education Action Plan for Sustainable Development (2005-14).	Yes	Yes, linked to above plans
ESD mandates for coverage of primary sectors * (the percent is not a ranking of performance, but only the amount of sectors with ESD mandates)	90% of primary sectors (does not include civil society)	70% of primary sectors (does not include teacher training, for TEIs or in-service training, or private sector)	60% of primary sectors (does not include formal education, teacher training, for TEIs or in-service, or community participation)	70% of primary sectors (does not include teacher training, for TEIs or in-service teacher training, or private sector)	90% of primary sectors (does not include private sector)	50% of primary sectors (does not include non-formal education, teacher training, private sector or community participation)	40% of primary sectors (mandates exist for national curriculum, primary and secondary education, and non-formal education)
Budget amount for ESD	n/a	No specific budget allocated for ESD, though there is funding (from both government and private) to support government agencies mandated to promote ESD	n/a	No specific budget allocated for ESD	The Sustainable Environmental Education Project (SEED) of Department of Education receives an annual budget of 350,000 PHP (~8,400 USD).	n/a	n/a
Allocation of budget for ESD in specific sectors	No allocation to core areas, only expected allocation would be to the committees	n/a	n/a	n/a	Non-Formal ESD activities receive specific funding, but Formal Education is not distinguished by individual subjects.	Amount not available, but supposed allocation for ESD coverage across all sectors	Specified allocation for ESD in primary and secondary education, but amount is not available
Budget to individual schools for ESD	No	This is not applicable to country context.	This is not applicable to country context.	No	This is not applicable to country context.	Schools do receive specific budget for ESD In 2011, a total of 48M won (~\$41,000 USD) was distributed to support EE programs, and an additional 8M won for environmental experiential activities.	Schools do receive specific budgetary support for implementing ESD, but amount is not available

<p>Authorities in charge of ESD funding to schools</p>	<p>n/a</p>	<p>Ministry of Education has authority for distributing educational funds to school (but none for ESD specifically). Some local Environmental Protection Administrations have provided limited funding to individual schools</p>	<p>Ministry of Education (MEXT) is main authority; Ministry of the Environment (MOEJ) provides supports for non-formal ESD; Additionally, the Asia-Pacific Cultural Centre for UNESCO (APCCU) and other similar institutes support project-based activities</p>	<p>n/a</p>	<p>This is not applicable to country context.</p>	<p>The Ministry of Education and the Ministry of Environment are main authorities for ESD funding distribution</p>	<p>4 Main Agencies (all under Ministry of Education) depending on schools jurisdiction: Office of the Basic Education Commission, Office of the Private Education Commission, Office of Non-Formal and Informal Education, and Office of the Vocational Education Commission. While some schools fall under the jurisdiction of the Local Authority Office of the Ministry of Interior</p>
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TABLE 2: ESD IN NATIONAL CURRICULUMS

	Cambodia	China	Japan	Malaysia	Philippines	Republic of Korea	Thailand
Current level of achievement on objectives detailed in country's ESD mandates	n/a	41-60%	n/a	n/a	41%-60%	1-20%	n/a
How is ESD integrated into national curriculum?	Integration of the SD concept into other subject areas of the national curriculum that related to economic and environment. For example, the subject on Earth and Environment in grade 10, 11, and 12 student.	ESD is mandated in the "Curriculum Standards of nine-years compulsory education" as a component of traditional subjects, including in the subjects of biology, physics, history, geography, chemistry. The Curriculum Standard for Higher School will be revised soon	Many ESD-oriented schools, especially public schools make the most of 'integrated learning' hours for ESD practices. There are school, though the number is limited, which attempts 'infusion approach' in the curricula. UNESCO Associated (ASPnet) Schools are expected to take initiative roles in the dissemination of ESD.	ESD is infused in primary and secondary children through "Environmental Education across the curriculum". As such, it is not taught as a single subject but infused and integrated in the relevant subjects such as English Language, Malay Language, Geography, Science, Local Studies, Civics & Citizenship. It is also infused through co-curricular activities.	It is currently mainstreamed as a component of traditional subjects. ESD is especially addressed in science courses, Good Manners and Right Conduct (GMRC) components, Health studies, and Technical Livelihood Education (TLE)	The Seventh Curricular Revision (2008), by Ministry of Education, Science and Technology (MEST) has guidelines on themes related to sustainable development and also includes 'Environment' subjects in middle and high schools, Rooting Green Growth in the national curriculum. "Creative experiential learning activities' is also called for.	ESD integration through multiple approaches: 1. SD Contents are added to 8 main subject areas of the curriculum; 2. Student Character Development encourages sufficiency lifestyle and public mindedness; 3. Specific project-based learning activities: i.e. natural preservation and environmental clubs and camp; 4. Additional ESD subjects: i.e. renewable energy & philosophy of sufficiency economy; 5. Allowance for 30% inclusion of local context in school-based curriculum
Does ESD's inclusion build on previous educational policies?	No	No	Does not apply to country context	No	Yes	No	Yes
Who are authorities for ESD at national level and what are their roles & responsibilities?	n/a	The Ministry of Education controls National Curriculum, Textbook for national Curriculum, Teacher's education, Higher education, Examination for university entering. While the Office of	MEXT for policy-making level; National Institute for Educational Policy Research (NIER) for practice/ curriculum level, ACCU as well as National Commission for	Department of Environment under the Ministry of Natural Resources and Environment Curriculum Development Division of the Ministry of	At the national level, there is a Coordinating Council for ESD made up of: 1. Department of Education (DepEd); 2. Commission on Higher Education (CHED) – Teacher Education Institutions;	The Korea Institute of Curriculum and Evaluation is in charge of integrating ESD into curriculum and text material development. The Board of Education is charged with providing in-service	At national level, the Office of the Basic Education Commission is charged with advocating, implementing and monitoring ESD.

Are there structures for inter-departmental and international cooperation on ESD?	No for inter-departmental, Yes for international cooperation	Policy Reform in the National Development and Reform Commission addresses issues of system reform for EE and ESD	UNESCO for the coordination for UNESCO ASPnet Schools	Education	3. Technical Education and Skills Development (TESDA); 4. Local Government Units; 5. Dept of Environment and Natural Resources; and 6. NGOs	teacher training	
Is curriculum development supported by ESD research and expertise?	No	Yes; 1. During 1999 to 2003 when the National Environmental Education Guideline for Primary and Middle School was made, each draft was shared with the curriculum standard development experts of each traditional subjects. 2. UNICEF is supporting a CCE research program to serve for the curriculum standard revised now.	Yes: There are studies on ESD by NIER for the development of an ESD curriculum. Also some academic societies such as the Japan Association for International Education (JAIE) study approaches for the development of ESD mainly at schools.	No	Yes, yes; for inter-departmental cooperation there are national and sub-national inter-agency committees on environmental education Yes, the internationally recognised Knowledge, Skills, and Values of ESD have been integrated into the country's curriculum.	Yes, ESD research projects are promoted by the Korean National Commission for UNESCO	Yes, many ESD approaches were piloted in whole-school approaches and model schools with support of Ministry of Education, Ministry of Natural Resources and Environment, UNESCO, ACCU and UNICEF. Based on the lessons/ best practices from these pilot schools, certain ESD strategies are integrated into national curriculum. Ex., "child-centred learning process: experiential learning and critical thinking" was originally developed in pilot schools.
Is research community responding to needs for ESD curriculum development?	No	No	Yes, there are some academic societies including JAIE and the Japanese Society of Environmental Education (JSOEE) which attempt to promote ESD within the country.	n/a	n/a	Yes, through the implementation of specific ESD research and through participation in ESD curriculum development.	Yes, The process of local curriculum development at school level is a participatory process which is based on the needs of community.

Are there clear ESD learning objectives and achievement targets?	n/a	In the National Environmental Education Guideline for Primary and Middle School issued by Ministry of Education, the learning objectives is to guide students to concern about environmental issues at all levels, help student gained the knowledge and skills of how to harmony get along with nature, develop environment friendly values, encourage students' participation and action to decision-making related to SD.	The learning objectives and achievement targets is to develop the ability to see through the essence of specific problems / the capacity to think and make a constructive criticism, to express own feelings and thinking's, to accept and respect different values, to work cooperatively with others, to seek concrete solutions, to understand the environmental carrying capacity of the community, country, and earth, and to implement spontaneously. (An Overview of ESD Activities in Japan).	- A clean, safe, healthy and productive environment for present and future generations. - The conservation of the country's unique and diverse cultural and natural heritage with effective participation by all sections of society. - Sustainable lifestyle and patterns of consumption and production. (Ministry of Science & Technology)	n/a	Yes, to foster global environmental leaders and environmental-friendly citizens	The Second Decade of Thailand Education Reform: Roadmap to Success (2009-2018) has focus of Learner Quality Development as below: - Focus according to National curriculum (from grade 1-12) is "Applying sufficient economy principles to one's way of life" - Focus according to ages: grade 7-9 is "Sufficiency lifestyle"
Is there a clear path for decentralizing ESD from curriculum to classroom?	Yes	No	No	No	n/a	No	Yes
Is ESD communicated to those responsible for its implementation?	Yes	No	Not appropriate to Japan context	Yes	n/a	No	Yes
Has ESD led to wider educational reform?	No	Yes - The Program of "Environmental Educators' Initiative" supported by BP, WWF-China and MOE had promoted the enquiry based learning method and action research as the mainstream teaching methods for China Curriculum Reform since 2001.	In part: The answer is YES just because there are good practices by limited number of schools. These schools usually take whole-school approach for ESD.	No	n/a	Yes; Rooting the Green Growth education in the school curriculum (making the Green Growth education guideline), expanding the Green Growth education in the curriculum, Promoting "Low Carbon Green School" and energy conservation as part of Green Growth	Yes: ESD is enhancing quality of learning which makes the learning is maximum. More practical and holistic of learning, it means that all stakeholders is also a learner, particular teacher themselves, it could say that ESD is promote a lifelong learning as its process and interdisciplinary

Are there feedback mechanisms for monitoring and evaluation of ESD implementation?	No		No		No		Yes (but no examples given)		n/a		No	education, etc.	No	context is cultivates the learner in holistic development for raising to be a good citizen of society.	No
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TABLE 3: ESD IN FORMAL EDUCATION

	Cambodia		China		Japan		Malaysia		Philippines		Republic of Korea		Thailand	
Do specific teaching strategies or educational theories guide ESD course content?	No	No	No	No	No	No	No	No	n/a		Yes, project approach is recommended, but mostly related to convergence education	Yes: experiential learning, action learning, and community-based learning are all applied.		
Are there progressive learning objectives per grade for ESD teaching/learning?	No	Yes	No	No	No	No	No	No	Yes		No	Yes		
Do schools adopt a whole-school management approach to ESD?	No	Yes – the Center for Environmental Education and Communications of MEP has piloted the Green Schools	Yes, but limited	Yes; there are 125 such schools (accounting for 1.25% of all schools)	Yes, but numbers are not available.	Yes; there are 28 Green Schools piloted in Korea (as of 2011)	Yes: pilot schools have been supported by both Ministry of Education and Ministry of Natural Resources and Environment. These schools include Sufficiency Economy School, Eco-School, and Environmental Education School.							
Support by school boards for ESD	No	No	No	No	No	No	Yes	Yes	Yes	Yes; school boards support in-service Teacher Training on ESD (examples include Seoul Board of Education and Gyeonggi-do Board of Education)	Yes: The school board and community work together to develop learning opportunities about local context and community. This usually focuses on strengthening students' ability to understand local issues, investigate local challenges and present with confidence their findings and recommendations.	Yes: The school board and community work together to develop learning opportunities about local context and community. This usually focuses on strengthening students' ability to understand local issues, investigate local challenges and present with confidence their findings and recommendations.		
Support by school administration for ESD	n/a	They have one of the decision making roles for ESD's implementation in the schools, but are also overly pressured to ensure teaching matches the contents of	Generally speaking, few efforts have been made. But there are a limited number of good cases as seen Kesen-numa city.	Some schools administrations show support towards ESD through extra-curricular activities and taking part in competitions.	School administration provides a basic supervision role for ESD implementation throughout the school.	Provide support through ESD related lectures and workshops; also support in-service teacher training for principals and vice-principals	School administration provides "Teacher as learner", "Learning by doing" and "participatory implementation" workshops; Also support for Teacher teamwork in whole process; lesson							

Main topics addressed under ESD Including: Climate Change, Disaster Risk Reduction, Mitigation and Adaptation, Sustainable Consumption and Production, Indigenous Knowledge, Cultural Values/Ethics (linked to sustainable lifestyles), and National Plans for Sustainable Development	Coverage of most thematic topics exist, except for Disaster Risk Reduction and Mitigation & Adaptation	University Entrance exams	n/a Additional note: Although topics are not addressed under ESD, many schools address environmental issues, while some also address human rights and other social issues. Since the Great East Japan Earthquake in 2011, Disaster Risk Reduction is a nationally focused topic	All topics except National SD Plans covered; i.e. Climate Change, Disaster Risk Reduction, Mitigation & Adaptation, SCP, Indigenous Knowledge, Cultural Values and Ethics (linked to Sustainable Lifestyles)	Climate Change, Disaster Risk Reduction, Indigenous Knowledge, National Plans for Sustainable Development	Climate Change, Sustainable Consumption & Production, Indigenous Knowledge, and Cultural Values and Ethics (linked to Sustainable Lifestyles),	Coverage of most thematic topics exist, except for Mitigation and Adaptation & National Plans for Sustainable Development. National Plans for SD are not included because it is Sufficiency Economy that is taught in Thai curriculum.
Are ESD teaching materials widely available?	Some schools have them	Some schools have them	n/a	Most schools have them	n/a	Some schools have them	All schools have them
Do ESD teaching materials use multi-media formats?	No	No	n/a	No: Though some teachers find and use ESD related videos and programmes on their own initiative.	Yes	Yes: mainly books, but CDs and DVDs are also used (especially those prepared by UNESCO)	Yes: electronic files to support lesson plan development, E-books, E-learning programs, animation, and video recorder. Yes
Does ESD teaching use innovative learning methodologies?	No	n/a	No	Yes	Yes	Yes	Yes
What is ESD teaching approach?	n/a	Disciplinary based, topical and knowledge-based	Inter-disciplinary, topical & integrated, practice-based	Disciplinary, Integrate, and Knowledge-based	Inter-disciplinary, Integrated, and Practice-based	All: disciplinary & inter-disciplinary, topical & integrated, knowledge-based & practice-based	All: disciplinary & inter-disciplinary, topical & integrated, knowledge-based & practice-based
Are there 1) practice standards, and 2) auditing mechanisms for ESD teaching?	No, no	No, no	No, no	No, Yes	n/a	No, no	n/a, no
What are the major learning outcomes currently being	n/a	Practical knowledge about SD has mainly been promoted: though	Very difficult to answer, but there are case reports by individual	Students generally have a very basic understanding about the	n/a	Knowledge-based: to understand climate change and related	Knowledge-based: local context, indigenous knowledge,

achieved?				Chinese NGOs have also promoted skill-based and value-based learning for ESD	schools (Collection of these practices to be published by ACCU; see "A Guide to Developing and Using ESD Materials").	eco-system, environment and basic sustainable development which are embedded in the traditional disciplines.		issues; Skills-based: to learn how to cooperate with other students and people; Values-based: to orient sustainability	local wisdom & culture, children rights, natural resources and local ecology. Local & global issues, languages. Skill-based: Presentation skills, critical thinking, teamwork and group work, foundation of language skills, reading speaking, writing, listening, planning skills, monitoring. Value-based: Respective, Thai-ness, self-esteem, equity, self-discipline, responsibility, positive, active learning, self-motivation, confidence.
Are there identifiable links between ESD implementation and students' behavior change?	No	No	No		n/a	n/a	Yes	n/a	- When schools started ESD, students learned about waste management. Today, students and schools remain active in waste management and maintaining green environment. - Teachers gained awareness on the Convention on the Right of the Child and Child Right Based Education, these concepts still influence teachers and were adopted into whole-school activities. - Learning by doing stimulates students' eagerness to learn. - Learning about local context strengthens love for students' community.

TABLE 4: ESD IN TEACHER TRAINING

	Cambodia		China	Japan	Malaysia	Philippines	Republic of Korea	Thailand
Are student teachers required to receive ESD training?	Yes	No	No	No	No	Yes, but it is included as topic for teaching in the "Specific Topic Course" curriculum	No	n/a
How many TEIs provide ESD training?	Some of the TEIs	Some of the TEIs	Some of the TEIs – several universities provide ESD training for education students	All TEIs	Most TEIs are providing some form of ESD training.	Some of the TEIs	n/a	n/a
Do student teachers interact with SD experts/professionals?	Yes	No	No	Yes	Yes	n/a	n/a	n/a
What ESD topics do student teachers receive training in? i.e. Climate Change, Disaster Risk Reduction, Mitigation and Adaptation, Sustainable Consumption and Production, Indigenous Knowledge, Cultural Values/Ethics (linked to sustainable lifestyles), and National Plans for SD	All topics except Disaster Risk Reduction are covered	Only on National SD Plans specifically	n/a	All topics except Mitigation and Adaptation are covered	Climate change, disaster risk reduction, mitigation and adaptation, and Indigenous knowledge.	(same as topics in formal education): climate change, SCP, Indigenous knowledge, cultural values/ethics, and also includes disaster risk reduction	n/a	n/a
Are TEIs teaching innovative learning methodologies linked to ESD?	Yes	No	n/a	Yes	n/a	Yes	n/a	n/a
Percentage of in-service teachers with training in ESD	n/a	Less than 1%	n/a	n/a	n/a	Less than 5%	n/a	n/a
Established mechanisms for teachers to share good practices in ESD	No	No	Does not fit national context; But, there are opportunities to share good practices at National Meeting for UNESCO ASPnet Schools and annual sessions by academic societies.	No	n/a	Yes; the Ministry of Environment holds relevant conferences for teachers; the is also work by UNESCO DESD activities and the Tongyeong RCE	Yes; training of trainers conducted for ESD, EE, & youth camps; Workshops held on Right Based Education Knowledge Management, EE, ESD, Citizenship, & Democracy. Also held workshop on best practices in EE	No
Teacher assessment on quality of ESD teaching	No	No	No	No	n/a	No	No	No

TABLE 5: ESD IN NON-FORMAL EDUCATION

	Cambodia	China	Japan	Malaysia	Philippines	Republic of Korea	Thailand
How many EE or ESD Learning Centres are there in the country?	n/a	22+	n/a	n/a	n/a	There are 688 environmental centres that support environmental education activities	There are 7,409 Community Learning Centres under the Office of the Non-Formal and Informal Education (ONIE)
Are there authorities in the National and Local governments charged with non-formal ESD?	Yes for National – Ministry of Education, Ministry of Environment, and Royal Academy of Cambodia; No for Local.	No, no --- but the Center for Environmental Education and Communications of MEP does take on some of this role.	Yes, National – Ministry of the Environment (MOEJ); Local – not consistent: There are some ESD-oriented local gov., but they tend emphasise formal education.	Yes, National – Department of Environment under the Ministry of Natural Resources and Environment Local – Department of Science, Technology and Innovation	Yes for National – Department of Environment and Natural Resources; No for Local.	Yes; KCSD in Ministry of Environment and Green Growth Committee at National level; and Local Agenda 21 linked to local government	Yes; National – Ministry of Education; and Local - Educational establishments attached to the ONIE across the country
Vision or strategy outlining objectives of non-formal ESD	No	No	Yes; MOEJ has strategies to promote ESD in non-formal settings with the objective to network the individuals and organisations for information exchange.	Yes; To achieve a deeper and better understanding of the concepts of environmentally sound and sustainable development, and a caring attitude towards nature, environmental education and awareness will be promoted across the board, incorporating information sharing and training.	Yes: 1. Identify the issues about the environment in the community; 2. Provide information for members of the community about the environment and how it can be preserved and enhanced; 3. Establish opportunities for community members to actively engage in helping the community solve environmental problems.	Yes; fostering environmental-friendly citizens	Yes, The objective of the provision of non-formal and informal education activities to NFE learners is to equip them with knowledge and skills needed by the learners so that they can have ability for self-reliance and quality of life improvement.
How often do government agencies engage citizens in ESD or SD awareness raising?	Regularly (all the time)	At least once per year	n/a	n/a	n/a	n/a	Education activities of ONIE always relate to SD. Meanwhile, there are CLCs for Sufficiency Economy Philosophy at every sub-district level.
What are the main learning methodologies for non-formal ESD	n/a	Use of slogans through multi-media (ex. “ Save the Water”)	Very few methodologies outlined compared to formal education	Campaigns, talks, and media advertisements	1. Active learning/teaching strategies (including life-skills approaches & 4As:	Through Campaign, Symposium, Awards, Colloquium, Certification Programme, etc. From	The key methodologies and approaches used to achieve effective implementation of ESD

					<p>Aspire, Audit, Adapt, Action);</p> <ol style="list-style-type: none"> 2. Radio-based instruction; 3. Independent learning; 4. One-to-one instruction. 	<p>2011 the Ministry of Education plans to establish regional learning centres for environmental education and publishing learning materials for each class of citizens; children, soldiers, housewives, etc</p>	<p>are the contents and activities identified in the NFE curricula/ courses which are taught through CLCs across the country.</p>
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TABLE 6: COMMUNITY AND CIVIL SOCIETY PARTICIPATION IN ESD

	Cambodia	China	Japan	Malaysia	Philippines	Republic of Korea	Thailand
Multi-stakeholder networks or partnerships on ESD	There are, but no details available	Not formal network, but there are over 3500 NGOs in China. Many work on SD/ESD and often collaborate with each other.	The Japan Council on the UN DESD (ESD-J) provides networking of NGOs involved in ESD and includes over 100 organisations.	n/a	n/a	Korean Environmental Education Networks, RCEs or ESD, Local Agenda 21, and University Green Campus	Kenan Institute, Thai Environment Institute, Plan International, Right to Play
Government support for ESD networks/partnerships	Yes, through support for ESD awareness raising by multi-media through workshops	Yes, the government will engage with NGOs conducting desirable work	Yes, ESD-J and other major NGOs are invited to participate in Ministerial meetings on ESD	Yes, through recycling campaigns and recycling bins in schools.	n/a	Yes, cooperation of local government with non-formal and civil society sectors	n/a
Citizen participation in SD planning – is it mandated and how often does it occur	No	Yes is mandated, but happens only when it is needed by the government	No	No	n/a	Yes, frequently	n/a
Coverage of SD themes by NGOs	All thematic topics are covered by NGOs	Together, the NGOs cover all major SD themes, except National SD Plans	Not applicable to country context	Climate change, Disaster Risk Reduction, Mitigation and Adaptation, SCP	n/a	NGOs address all relevant themes	NGOs address all relevant themes
Involvement in international ESD activities and cooperation	Yes, government staff participate in international and regional ESD events in order to gain training and knowledge on ESD	Yes in terms of DESD implementation and the RCE network	Yes, An expert attends annual meetings organised by UNESCO HQ, such as MEEG (Monitoring & Evaluation Expert Group). High level meetings held at HQ include Japanese representatives. The Japanese National Commission for UNESCO suggest ESD strategies to UNESCO General Conference.	Yes, with UNESCO and JICA	n/a	Yes: RCE Network, TEIs for ESD, Water Forum, etc.	Yes: ASPnet, ESD pilot project by ACCU, Rice project by ACCU, RCE network, regional cooperation on DESD activities.
Are media technologies used for ESD and SD awareness raising?	Yes – TV and radio are used	Yes – especially via TV shows	No	Yes – advertisements and community service messages	n/a	Yes: publications, CD/DVDs, websites, social networking, public information museum..	Yes, Teacher TV and the programme under the OBEC
Does the government provide support for using media technologies for ESD	Yes	Yes	No	Yes	n/a	Yes	n/a

TABLE 7: PRIVATE SECTOR PARTICIPATION IN ESD

	Cambodia	China	Japan	Malaysia	Philippines	Republic of Korea	Thailand
Is there organized cooperation between governments and private sector on ESD?	No	Yes; ex. HSBC support the Foundation for Environmental Education in China through MEP to work with the Green School projects and enhance some to Eco-Schools	No	n/a	Yes; ex. The Pollution Control Association of the Philippines, Inc. and the Philippine Business for the Environment both have close working relationships with the government.	Yes: Private sector support for Green Growth Education includes several corporations. Some additional support for Green Growth teacher training is hosted by Green Growth corporations/businesses.	n/a
Is there cooperation on ESD between companies and consumers?	No	n/a	No	Yes – No plastic bag campaign – every Saturday (but can still buy the bag)	n/a	No	n/a
Does government initiate/promote training for business leaders on SD?	Yes	n/a	No	n/a	Yes; ex. ASEAN+3 Leadership Forum on SCP (in 2010)	n/a	n/a
Do businesses provide in-service training/ continuous professional development on SCP, supply chain greening, or env. management.?	Yes	Yes	Yes	n/a	n/a	Yes	Yes
Are business providing consumer awareness raising on SC, eco-products, etc.?	Yes	n/a	Yes	Yes	n/a	Yes	Yes
Are there innovative examples of private sector engaging with ESD activities in the country?	n/a	Yes – Sinoceanland, BP, and Volkswagen have all supported EE/ESD activities in China	The ESD Research Centre of Rikkyo University organizes activities on CSR & ESD, and promotes 'Sustainable Education' for private sector. For actual collaboration of businesses and schools, see 'A Guide to Developing and Using ESD Materials'	Yes, but no examples	n/a	Yes; corporations donations for Green Growth education (ex. Samsung Engineering, GS Caltext, Hyundai Heavy Industries, SK Innovation, LG Chem, etc.)	Yes, some companies such as Honda, Toyota, Bank Krung Thai, Siam Commercial Foundation, Matichon Newspaper, & Bridgestone Group Thailand support ESD activities.

SECTION 3

Comparative Assessment and Identification of ESD Leverage Points

Comparative Assessment of Countries' ESD Implementation Status

The seven ESD country status reports provide a valuable understanding of how ESD is being implemented and actualised across various countries. A quick review of Tables 1 through 7 on the previous pages can provide several notable similarities in ESD implementation across all seven countries, and it can also identify a number of unique features in ESD implementation being applied by just one or two countries. The following text attempts to provide a more in depth comparative assessment of the process and system of ESD implementation in these countries. This comparative assessment is followed by a capacity analysis to more appropriately identify the necessary components of effective ESD implementation, the major success factors across the cases, and the persistent barriers to good implementation. After the analysis, major findings and recommendations for general improvement of ESD implementation will be discussed. The initial comparative analysis is structured based on the sectorial divisions present in the country reports.

National Policy, Mandates and Budget for ESD:

Starting with a consideration of the inclusion of sustainable development in national development plans, it was found that all countries employ some type of sustainable development approach. There are some countries included in this survey where action was initiated earlier on sustainable development, such as the Philippines where their first Strategy for Sustainable Development was enacted in 1989 and still strongly applies its national Agenda 21 plans or China where their *White Book* response to Agenda 21 was produced in 1994. Thailand stands out as an interesting case where its own nationally defined response to sustainable development was defined through the Philosophy of Sufficiency Economy and enshrined in the country's development plans in 2002, but Korea now also has its Green Growth agenda since 2008. Japan is notably recognised as having been a global leader in promoting green markets and developing many policy mechanisms for this purpose that have now been replicated by countries throughout the region; the country is also highlighted as one of the leading promoters and supporters for the establishment of the UN DESD. By the time DESD was initiated though, all countries had in place some type of sustainable development strategy.

The next consideration was if such national SD plans also included some call for an educational response in achieving this plan. Again, in this case it was found that the relevant plans in all selected countries do include recognition of the need for education to support the achievement of sustainable development. Thus, in one sense it could be mistakenly argued that inclusion of a National Sustainable Development Plan and the call for ESD to achieve the country's development plan has little influence on the overall achievement of ESD implementation. However, as the countries included in this study were selected for their active efforts in ESD in order to survey countries where a decent level of implementation could be reported, then it could



rather be argued that these factors are precursors to active ESD implementation, especially if it was found that these are not factors achieved universally across the region. Beyond this basic yes or no answer on if countries have an SD plan that highlights education though, there is also benefit in gaining deeper understanding of how the interpretation of sustainable development and what role is placed of ESD for achieving this is contextualised in each country.

At the next subsequent tier of ESD policy mandates, it was investigated which sectors (including national curriculum, primary education, secondary education, higher education, non-formal education, teacher education institutions, in-service teacher training, civil society, community participation, and private sector) were included in the mandates for ESD implementation. This was the first level at which there are clear differences regarding countries' mandates for ESD (see table 8 on the following page). All seven countries have mandates for the inclusion of ESD in the national curriculum and in formal education (for both primary and secondary education). All countries except one have a mandate for ESD's inclusion in higher education (although this sector was not a primary focus of the survey). For non-formal education, five countries have mandates for ESD inclusion, however the two countries without such mandates Japan and Korea do both have very good practices in regards to non-formal ESD, especially in line with an environmental education focus. ESD mandates for cooperation with civil society and NGOs also exist in five countries. While four countries have mandates for ESD in regards to community participation. The two areas with the lowest rate of mandates are for ESD in teacher training, both in teacher education institutes (TEIs) for pre-service teachers and also for in-service teacher training, and for cooperation on ESD with the private sector which both only have mandates in two countries.

For questions regarding budget for ESD, the responses were limited as either such information was not available or in the case of specific funding for ESD in formal education this was not applicable to the way schools and education systems are funded in several countries. In the two responses where budget amounts were actually provided, these were for specific projects or initiatives by the government and actually linked to environmental education programmes. In considering the importance of financial resources for ESD as a key input factor, the inability of countries to report on such information creates a potential challenge, but if specific consideration is given to how ESD is applied in formal education it may actually prove a non-factor depending on how educational funding is allocated. For example, if budgets to schools are provided on a per capita allocation and it is the curriculum that mandates what is taught and how it is taught, then in some countries educational funding may have very little connection to the specific teaching of ESD.

TABLE 8: MANDATES FOR THE INCLUSION OF ESD IN VARIOUS SECTORS

	National Plan for Sustainable Development	National SD Plan includes call for Educational response	Specific Mandates on ESD per Sector																	
			National Curriculum	Primary Education	Secondary Education	Higher Education	Non-Formal Education	Teacher Education Institutes	In-Service Teacher Training	Civil Society (NGOs)	Community Participation	Private Sector (Businesses & Corporations)								
Cambodia																				
China																				
Japan																				
Malaysia																				
Philippines																				
Republic of Korea																				
Thailand																				

 = Existence of positive mandate
  = No existing mandate

National Curriculum:

The initial question asked in regards to national curriculum was to provide a ranking on the current level of achievement on the objectives detailed in the country's ESD mandates. For this question, only three country surveys has responses and the highest two among these suggested around half (or 41-60%) of the overall objectives have already been achieved, while the third response provided a 1-20% achievement ranking. An important question for receiving very informative answers from all respondents was an open ended questions asking for an explanation of how ESD is being integrated into the national curriculum in their country. In six of the seven cases, the core approach to ESD inclusion in the national curriculum is by including sustainable development thematic topics in the teaching of traditional subjects. There is also a strong connection where environmental education remains a main focus for ESD inclusion in five of the countries. While some countries also have curriculum mandates for aspects such as integrated learning hours (in Japan) or creative experiential learning activities (in Korea) where ESD is often selected as a topic of instruction, it is only in Thailand where there is a clear distinction that ESD should be included through multiple approaches (including both integration into traditional subjects and as part of project-based learning activities).

National focal points were also asked if the inclusion of ESD in the curriculum has built on previous educational policies and strategies, but this received a positive response in only two countries' surveys. Four positive responses were provided that the inclusion and uptake of ESD has led to wider educational reform with clear explanations of how the progressive learning methodologies and teaching approaches elucidated in ESD were later used to strengthen educational practice across the entire system. In regards to the existence of feedback mechanisms for monitoring and evaluation of ESD implementation, only one country gained positive response but the national focal point was unable to provide any supporting information.

The surveys also addressed the existence of effective capacity in regards to institutional arrangements for ESD implementation. Respondents were asked to identify the national authorities in charge of ESD and what are their main roles and responsibilities; all but one respondent was able to provide detailed information. The relevant department or ministry of education is usually the lead implementing authority, but there is often also a diversity of cooperation with different departments, offices and ministries. It is relatively common for countries' environmental ministry (or relevant authority) to also take some supportive role in ESD implementation especially in relation to non-formal ESD. Even within the national education authority, there may likely be different departments and research institutes charged with various aspects of ESD including policy planning, curriculum development and standards, higher education, teacher training, etc. Only three national focal points responded that formal structures have been established in the country to support inter-departmental cooperation on ESD implementation.

Four countries have clear mechanisms for supporting curriculum development through the application of domestically prepared ESD research and expertise, while an additional country has not prepared this research domestically but has drawn on internationally prepared research and guidelines for ESD in its curriculum development. Only three respondents answered positively to the question of whether their research community is effectively responding to the needs for ESD curriculum development, and the approaches detailed are rather diverse from the participatory development of local curriculum through to inputs being made by academic societies and NatComs.

Focussing on the inclusion of ESD in the national curriculum, the survey asked if there were clear learning objectives and achievement targets identified for ESD. For five of the country surveys responses were provided, two of which are tied to objectives for environmental education, one which is related to the overall plan for educational reform in the country, and the other two which seem to more clearly detail specific and multiple objectives for ESD learning achievements. There were only two positive responses that the country has a clear path for decentralising ESD from the curriculum to its classroom application. For a further question on the communication of ESD curriculum and strategy to those who are actually responsible for its implementation, three national focal points replied that this was occurring.

Formal Education:

The survey questions for formal education try to address if ESD implementation is applying innovative learning approaches. Only two identified the use of specific teaching strategies and educational theories to guide the course content for ESD. These include project-based learning, convergence education, experiential and action-based learning, and community-based learning. Considering if countries utilise progressive learning objectives for ESD teaching, meaning that there are per grade objectives in relation to ESD that subsequently build upon the previous objectives throughout a student's educational tenure, there were three countries that have such per grade learning objectives. It was also asked if there were any schools in these countries that are applying a whole-school management approach to ESD, recognised as one of the more innovative means for the inclusion of ESD across the entire learning environment, for which six countries have a small number of pilot schools in each country where this model is applied. An additional response from Thailand was notable as it was the only country to demonstrate that some of the best practices generated by these pilot schools have been identified for further replication across all schools as an important means for qualitative educational improvement.

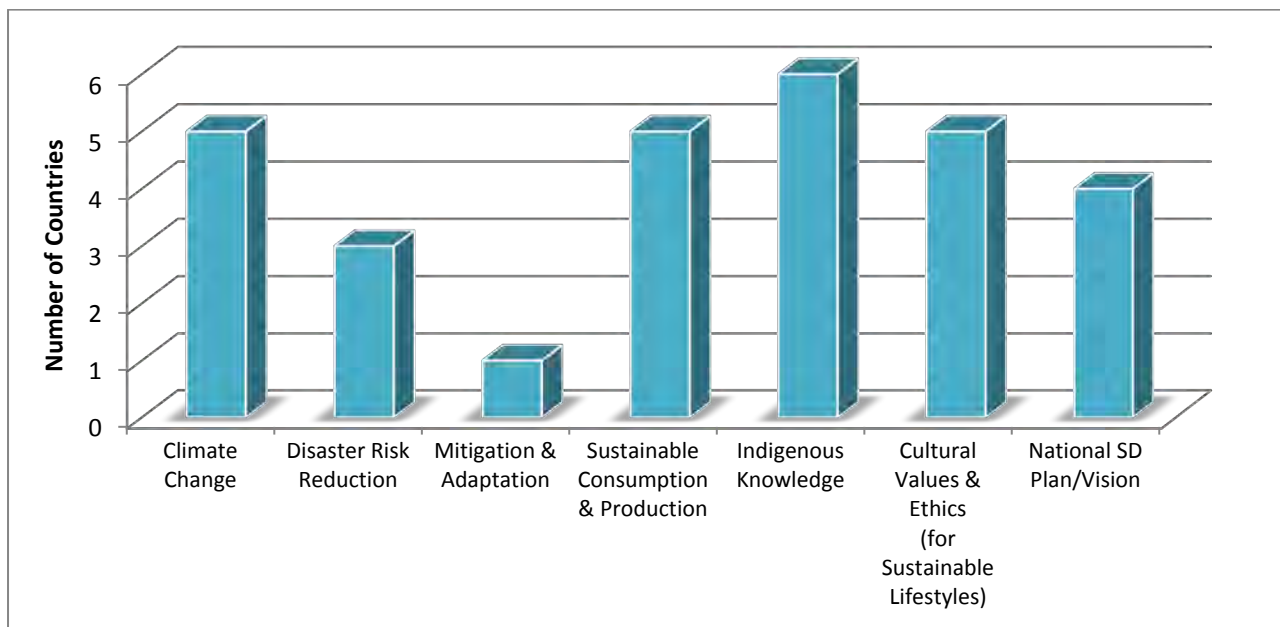
The survey also addressed the issue of institutional capacity and structure for ESD implementation at a school level. Regarding support by school boards for ESD implementation, three respondents replied that this occurred in their country. However, six national focal points were able to provide detailed information

on how school administrations support the implementation of ESD. The effort of school boards and school administration in Korea to provide in-service teacher training on ESD is notable. In some selective cases from individual schools, the school administration has taken a leading role in developing special learning opportunities or extra-curricular activities to support ESD.

The research team previously identified a set of priority ESD thematic topics that include climate change, disaster risk reduction, mitigation & adaptation, sustainable consumption & production, indigenous knowledge, cultural values & ethics (that underpin sustainable lifestyles), and national plans or visions for sustainable development. Six of the seven country surveys had responses on the coverage of these thematic topics with the number of topics covered ranging between 4 to 6 and the mean coverage of topics being 4.8. Figure 1 (see below) shows the compiled coverage of topics across the six reporting countries. Indigenous knowledge was the only topic being addressed by all six countries; while climate change, sustainable consumption & production, and cultural values & ethics were each covered by five countries. There was moderate coverage of national SD plans (4 countries) and disaster risk reduction (3 countries), but mitigation & adaptation was only addressed in one country.

FIGURE 1: Overall Coverage of ESD Thematic Topics in Formal Education across six countries *

** Information on the coverage of thematic topics was not available for Japan*



Countries were also surveyed on the availability of ESD teaching materials (the potential responses were coded in a simple qualitative ranking as: none, some, most, or all of the schools have them). Five country surveys had responses to this question; with three replying that only some of the schools have such teaching materials, one replying that most of the schools have them and one stating that ESD teaching materials are

available in all schools. Three national focal points responded positively that these ESD teaching materials utilise multi-media formats, including videos and DVDs, electronic books and learning programs, electronic materials to support lesson plan development, animation, and video recording of students in action. Four respondents replied that innovative learning methodologies are applied to ESD teaching in formal education in their country.

Countries were also asked to distinguish the approach to ESD teaching by marking all applicable options among: disciplinary vs. interdisciplinary; topical vs. integrated; and knowledge-based vs. practice-based. Table 9 (see below) shows the general spread of teaching approaches across the six responding countries. Two countries utilise all teaching approaches in their ESD implementation. Two other countries are noted for the connection between a disciplinary and knowledge-based approach, while the final two countries apply an inter-disciplinary and practice-based approach. Among those four countries who answered only one or the other position for each duality, the usage of an integrated approach was favoured 3 to 1 over a topical approach.

TABLE 9: SPREAD OF ESD TEACHING APPROACHES ACROSS SIX COUNTRIES *

Disciplinary	4	4	Inter-disciplinary
Topical	3	5	Integrated
Knowledge-based	4	5	Practice-based

** Information on the teaching approach was not available for Cambodia*

In none of the countries was it possible to identify the usage of practice standards for ESD in formal education, and only for one country survey was the application of auditing mechanisms for ESD teaching identified. Countries were also surveyed regarding the main learning outcomes currently being achieved from ESD teaching, which was based on the divisions of knowledge-based, practice-based and value-based learning. Among the five responding national focal points, only two acknowledged outcomes for all three learning divisions, although only one provided detailed specifics about these outcomes. Knowledge-based outcomes are the most regularly achieved across all countries. Finally, the question was asked if there are identifiable links between ESD implementation and students' behaviour change. Four national focal points responded, two positively and two negatively, but only for one country was it possible to provide detailed information in relation to the changes being achieved. In this case, we see both a behaviour change for teachers as they learn to use and adapt innovative learning approaches and also for students who continue sustainable practices after they learn them, gain stronger appreciation of community through localised curriculum and problem-based learning, and gain more eagerness for learning after they experience action-based, learning-by-doing educational approaches.

Teacher Training:

The first question regarding teacher training for ESD was if there is a requirement for all pre-service, student teachers to receive instruction on ESD teaching. Only two countries have such requirements in place. Next, it was asked how many teacher education institutes (TEIs) are actually providing ESD training (the potential responses were coded in a simple qualitative ranking as: none, some, most, or all of the TEIs). Four of the six responses stated that some of the TEIs provide ESD training, while in one country most TEIs do provide training and only in a single country do all TEIs provide ESD training. Interestingly in Malaysia, the country where all TEIs provide ESD training it is not one of the countries where ESD training is required for all student teachers. For the two countries that have such a requirement, in one country ESD training is provided in most TEIs and in the other only some TEIs.

The process of instruction for ESD teacher training was also addressed. Three national focal points responded positively to the question on if student teachers have a chance to engage/interact with SD experts and professionals for the purpose of gaining practical experience and inspiration on ESD. Addressing the coverage of the same ESD thematic topics as in formal education, there were five responses and in four of the five countries we see either the same level or even a higher number of topics covered in teacher training than was covered in formal education; with the mean coverage of topics being 5.25 for these four countries. However, for the fifth country there was only specific coverage in regards to the national SD plans in teacher training. It was also asked if TEIs are providing specific training on the innovative learning methodologies linked to ESD, for which three national focal points responded positively (although for another three countries it was not possible to provide information for this question).

Only two country surveys had responses on the percentage of in-service teachers with training in ESD, and both were below 5%. For two countries, clear examples for mechanisms established by the government to allow in-service teachers to share good practices in ESD implementation were provided. These mainly occur through workshops, trainings, and conferences organised by the government. Finally, it was asked if there is any form of teacher assessment on the quality of their ESD teaching, for which no positive answers were received.

Non-Formal Education:

The survey asked to identify the authorities in both national and local governments charged with implementing non-formal ESD. Six national focal points identified national authorities, and in four of these countries the ministry (or department) of environment takes the lead role. Two national focal points also identified a shared role across ministries and agencies for non-formal ESD implementation. Only three countries have clear authorities identified for ESD implementation at the local level.

Considering the strategy or objectives for non-formal ESD, five country surveys had positive responses and were able to provide information to this regards. Asked about the number of EE and ESD learning centres in their country, in China there are 22 centres, Korea has 688 environmental centres supporting EE activities, and Thailand has 7,409 community learning centres that promote SD through the philosophy of sufficiency economy. Six national focal points were able to provide information regarding the learning methodologies used in non-formal ESD. These include a diversity of approaches but the majority could be classified as general awareness raising and promotional activities including campaigns, symposium, slogans, and use of multi-media, however there are a few examples of active learning and life-skills based educational approaches being applied in non-formal ESD.

Community and Civil Society Participation¹:

Five of six surveys with responses stated that the government supports the development and activities of ESD in civil society networks and partnerships, while the information on this question was not available for the sixth country. The types of support provided by governments include cooperation with civil society/NGOs on specific projects or campaigns (3 countries), training and capacity building activities (1 country), and inclusion of civil society in policy processes (1 country). All of the reporting focal points also demonstrated that there are civil society networks and multi-stakeholders partnerships actively engaged in ESD.

Citizen participation in SD planning only occurs in two countries, one of these frequently and the other when the government decides it is needed. With a wide range of NGOs working on sustainable development, most countries see full coverage of the ESD and SD thematic topics across civil society. Also, all countries are actively involved in international ESD activities and cooperation including the RCEs, ASPnet, cooperation activities on DESD, the Water Forum, and ACCU pilot project (however, it should be noted that this type of international cooperation was actually a criteria of the country case selection, so may be biased by the selected cases). Five countries regularly use media technologies (television, radio, advertisements, etc.) to provide ESD and SD awareness raising. The use of such media technologies is also supported and encouraged by the governments of these countries.

Private Sector:

The encouragement of private sector, businesses and corporations, participation in ESD was the sector with the least support from the governments of the countries included in this report and also the sector with the highest rate of questions that respondents were not able to report on. Three national focal points responded

¹ For this sector, there were only 6 countries that provided responses.

that there is organised cooperation between governments and the private sector on ESD. This type of cooperation though is often based on a simple model of private sector funding for government-led projects or initiatives. For only one country was there a positive example reported for cooperation on ESD between companies and consumers, and this was in relation to businesses implementing the 'no plastic bag on Saturday' campaign in Malaysia. Three national focal points responded to the question on if the government initiates training for business leaders on sustainable development; two of these were positive and one negative. Five country surveys had positive responses (the other two were not available) that businesses are providing in-service training and continuous professional development on SD topics such as SCP, supply chain greening and environmental management. Five country surveys also had positive responses (the other two were not available) that businesses are taking an active role in providing consumer awareness raising around sustainable consumption issues such as eco or green products and efficiency. Finally, four national focal points were able to describe several innovative examples where individual companies have taken on a positive role in engaging with ESD activities in the country.

Capacity Analysis of Key System Leverage Points for ESD Implementation

When considering what types of capacities are beneficial in the implementation of ESD, it is useful to distinguish different types of capacities that should be considered. In this work, a basic division of input, throughput and output capacities was applied. This division of capacities can also be related to the division of indicator types utilised by UNESCO Asia and Pacific Regional Bureau for Education in their publication *Asia-Pacific Guidelines for the Development of National ESD Indicators* (2007). These indicator types are respectively status indicators, facilitative indicators, and effect indicators.

The three types of capacities may also be further subdivided to generate a greater understanding of the potential or necessary components for ESD implementation. Input capacities may include institutional arrangements, policy mandates, and resource capacities (both financial and human), thus addressing the basic structural components to ensure ESD implementation. Throughput capacities should consider the important factors in framing and structuring good ESD implementation, and these may include leadership, knowledge, expertise, and educational pedagogies and methodologies. The output capacities address the quality of learning performance, the impacts ESD is having on learners, and necessary accountability mechanisms, and these may include accountability measurements such as practice standards and targets, value and behaviour change, ESD knowledge gain and assessment tools for monitoring and evaluation. As the parallel work to this report is specifically conducting an in-depth assessment of ESD learning performance and the main factors in achieving strong ESD outputs/outcomes, the following capacity analysis will focus more on the input and throughput capacities that leverage effective ESD implementation.

National Policy, Mandates and Budget for ESD:

The previous comparative country assessment found that all surveyed countries have clear policies for sustainable development, most importantly a national development plan that is directed by the principles of SD, and it was further found that each development plan specifically distinguishes education as an important mechanism for the achievement of SD. It was mentioned that since all countries have such SD development plans, the importance of these may be underestimated. However, until it is demonstrated that this is a universal situation across all countries – at least in the Asia-Pacific region, then these two factors (a national plan for sustainable development and the inclusion of education/ESD within that plan) should still be considered as primary foundations for engendering a political environment that is conducive to the implementation of ESD.

The sectoral mandates for ESD are also important input capacities for initiating strong implementation of ESD. The survey asked if ESD mandates specifically address the promotion of ESD within ten different sectors; i.e., national curriculum, primary education, secondary education, higher education, non-formal education, teacher education institutes (related to pre-service teacher training), in-service teacher training, civil society (NGOs), community participation, private sector (businesses and corporations). All responding countries have mandates for ESD promotion in the national curriculum and in formal education (both primary and secondary education), however since the countries selected for inclusion in this report were selected due to the fact that they are countries with a proven record in ESD implementation in the two sub-regions selected for this report it should not be assumed that such mandates exist in all countries across the region until it is properly investigated.

It is also important to note potential differences in what a mandate for ESD promotion in different sectors actually entails. A mandate for ESD promotion in national curriculum, formal education, or teacher training is likely to ensure a direct line to the inclusion of ESD in formal educational policies, plans and strategies and act as a direct mandate for public institutions to implement ESD. While a mandate for the promotion of ESD in civil society, community participation, or the private sector may only result in government bodies taking efforts to cooperate with or include these sectors in government-led initiatives for ESD as a form of multi-stakeholder participation. Though this in itself is a very significant factor in promoting wider social engagement and actor involvement in ESD, it cannot act as a mandate for these private bodies to initiate ESD themselves. For both higher education and non-formal education, the impact of ESD mandates may differ significantly between countries depending on the relationship between the government and the relevant implementing institutions, thus leading to a more challenging assessment. Of course there is also no one specific way in which these types of mandates are framed or applied across various countries, so it is only possible to speak in broad generalisations without further research to investigate the specific details of

such mandates. Furthermore, mandates for either ESD promotion or ESD inclusion should be understood as mere baseline input capacities, and though important they alone cannot lead to effective ESD implementation. A couple of important capacity gaps were also identified especially in relation to mandates for ESD inclusion in teacher training (both for pre-service and in-service teachers) and for ESD promotion in the private sector.

Budget for ESD proved a rather tricky issue. First, the reporting rate on budget was extremely low even just in regards to if budget is allocated or not, and over three different questions that allowed the opportunity for identifying specific amounts of budget to different sectors there were only two answer (out of a potential of 21 answers = 3 questions x 7 responding countries) where specific budget amounts were provided which were both in regards to a single project or programme. However, as explained earlier for some countries the idea of a specific budget for ESD, or any other subject area, in formal education is not appropriate to the country context on how educational funding is provided. In fact, in this situation budget allocation can only be used to evaluate the overall quality of the educational system in a country and not the quality of learning occurring on specific subject areas. Thus at least in the sector of formal education the potential that funding and budget is actually a non-factor (or at best, a significant capacity, but one that cannot be compared across countries) should be further considered, for example if schools are provided a lump sum of budget for which they have autonomy over its allocation but the national curriculum does require that ESD is taught as a specific subject area then it may be appropriate to assume that funding would have to be allocated to ESD for this to happen. However, when capacity constraints such as a lack of ESD teaching materials is identified, it is difficult not to draw links to the amount of ESD budget as an issue. For sectors where budget is more directly linked to implementation of individual ESD projects or programmes, such as in non-formal education or civil society participation, funding may however remain an important factor in effective ESD implementation.

National Curriculum:

The process and approach for ESD integration into the curriculum is of obvious importance to the overall implementation of ESD and the learning performance it achieves. However, this is also an issue in which it is inappropriate to imply any type of ranking to various integration approaches solely based on an analysis of input capacities. If future research can identify clear correlation between various integration approaches and the affected levels of learning performance, then maybe such a ranking could be made. Furthermore, as the structure of various countries' educational systems – even countries that regularly top international educational achievement rankings such as OECD's Programme for International Student Assessment (PISA) –

can dramatically differ from one another, it is misguided to believe that ESD can be contextualised in these countries' educational systems through the same manner and approach.

When discussing the various approaches for ESD integration, what potentially provides a relevant consideration is the level to which the different approaches strengthen pedagogical reform for engaging second and third-order learning (as discussed in the 'Framing of Education for Sustainable Development' section of the introduction). Even here though, this would require some testing (such as performance based testing) of the learning achievements being achieved by these various approaches. Reviewing the approaches applied for integrating ESD in the seven countries, it was found that the standard approach is to incorporate selected SD thematic topics into traditional subjects and a dependency remains on addressing ESD through an environmental education perspective in several countries. It may be assumed that these approaches are less likely to drive pedagogical reform towards second-order learning, but the evidence is inconclusive in this regards. In fact, if the integration of ESD into traditional subjects not only includes thematic topics but also applies aspects of ESD's innovative learning methodology, then it may lead to a more significant reform impact across the traditional subjects. Most countries though do also employ a radically different integration approach in their pilot schools that utilise a whole-school approach to ESD teaching, and these are often selected for inclusion in good practice case studies for their exemplar learning achievements. The multi-tiered approach to ESD integration in Thailand demonstrates a progressive model that has been systematically developed to create a dynamic approach to ESD that has identified a number of means for contextualising the best practices of ESD into its educational system.

In regards to institutional structures, having clearly identified authorities at the national level for supporting ESD implementation is an important capacity. The roles and responsibilities should also be clearly identified. In several cases, it appears that the overall effectiveness of this capacity also improves when there is effective role sharing across various offices, departments and even ministries for different aspects of ESD implementation such as curriculum development, textbook preparation, teacher training, non-formal education, assessment/monitoring, etc. The process of role sharing can also be strengthened when national governments have established structures for inter-departmental or inter-ministerial cooperation on ESD implementation. A specific example of good role sharing that is an important throughput capacity in itself is the support for ESD curriculum development by a country's research community and if there is a good mechanism in place for incorporating research and expertise into ESD curriculum development.

A further throughput capacity that appears important is the detailing of a vision and/or clear objectives/achievement targets for ESD. In a few examples, there is also an interesting link made between the objective for ESD and the achievement of a country's sustainable development plan. Regarding knowledge sharing and dissemination of ESD, the survey addressed the structures for decentralising ESD

from curriculum to classroom and the level of communication on ESD to those responsible for its implementation. However, in specific regards to the sector of national curriculum it was inconclusive how meaningful these capacities are for effective implementation. Intuitively, these factors should be quite important, but what is potentially demonstrated is that as long as these processes exist in the other sectors (especially in regards to formal education and teacher training), it is not specifically necessary for them to also be duplicated here.

Finally, as an output capacity or an effect indicator what proved significant was the demonstration that the inclusion of ESD has led to wider reform across the educational system. This though is probably better understood as an indicator of ESD impact rather than as a capacity for ESD implementation. The survey also investigated if ESD's inclusion has built upon previous educational policies, but this does not appear to be a necessary capacity for ESD implementation and it may even hinder the support for wider educational reform.

Formal Education:

The first two input capacities that seem highly relevant for ESD implementation are also a challenge to appropriately contextualise due to the specific way in which ESD is integrated into the education system of a given country. One capacity is the application of specific teaching strategies or educational theories to guide ESD course content. The other capacity is the use of progressive learning objectives that set per grade ESD learning achievements to subsequently build upon each other. The inclusion of these two capacities will surely support/strengthen overall ESD implementation, however the challenge is that the lack of such may not actually identify a capacity deficiency. The reason for this is that in the common approach for ESD integration found across the selected country cases, the inclusion of SD thematic topics in traditional subjects, the case may be that rather than having ESD as a whole guided by specific teaching strategies and learning objectives it is the individual subjects that each includes their own set of these capacities.

Attempting to address institutional structures for the implementation of ESD in formal education, the survey looked at the type of support provided for ESD by both school boards and school administrations. For the countries included in the survey it appears that in most cases support by the school board does not provide that significant of an implementation capacity as compared to support by the school administration. A strong institutional capacity for ensuring the holistic implementation of ESD across the school's educational activities can be achieved by the school administration, and they can also support innovative initiatives and teacher capacity building for ESD. These same aspects could be functionalised by school board support, but through a comparison of the seven country reports this type of capacity is currently being actualised more by the school administrations than the school boards.

An important throughput capacity is a wide coverage of the important ESD themes and topics. There is no one thematic topic though that ranks higher than another in terms of implementation capacity, nor is the list of thematic topics included in this survey considered exclusive. If any type of quantitative judgement is to be made in regards to thematic topic coverage, then it would be best to focus on the overall scope and diversity of coverage. Nonetheless, it is important that the quantity of overall coverage does not overshadow the quality or depth of coverage for individual thematic topics.

The availability of ESD teaching materials is another significant throughput capacity and one for which many countries still are subject to a deficiency. The use of multi-media formats for disseminating ESD teaching materials provides a supporting secondary capacity for the previous. This is especially true when electronic lesson plans and teaching materials are developed that allow for inexpensive and wide distribution. The application of innovative learning methodologies is also an important capacity that can be addressed through the types of teaching materials that are provided, although it also applies as a stand-alone capacity. Regarding the survey question on the approach to ESD teaching, though a good strategy for the teaching approach is an obvious strength there were inconclusive results to distinguish any one approach as more effective. Furthermore, the research team had concerns that there were some inconsistencies in the way certain terminology were interpreted especially in regards to what constitutes a disciplinary vs. interdisciplinary approach for ESD teaching (i.e., it appears that the label inter-disciplinary approach was equally applied to the teaching of selective SD thematic topics in traditional disciplines and also to teaching ESD in a single, integrative course).

There are two significant output capacities, but again they may provide more benefit as effect indicators regarding actual learning impact than as necessary capacities for implementation. The first output capacity is in relation to identifying the learning outcomes being achieved based on the distinction of knowledge-based, skill-based, and value-based learning. This does serve some benefit as a capacity, especially in regards to evaluating and then improving on current performance. If this type of understanding also leads countries to better define the types of outcomes they want to achieve, then this would prove a significant implementation capacity. The second output capacity is in relation to identifying clear links between ESD teaching and students' behaviour change, and this would also be enhanced as an implementation capacity if it leads countries to better consider the targets they want to achieve for behaviour change. Finally, whole-school approaches for ESD demonstrate an exemplar approach for ESD integration, however since in each country it is only in a small number of pilot schools where this approach is applied and does not often influence the more standard practice of educational systems it was not identified as a necessary capacity for ESD implementation. What may actually prove more valuable though is if lessons and good practices learned from these model schools are being regularly adapted for replication in the wider education system.

Teacher Training:

The first input capacity that is important for this sector is if there is a requirement for student teachers to receive training on ESD teaching. However, it is also worth noting that there appear to be some discrepancies between mandating ESD training and its actual implementation, so as an indicator this should always be double checked against real practice. The second input capacity is thus the amount of TEIs actually providing ESD training. Similarly, the amount of in-service teachers who have training on ESD teaching is also an important capacity, and although there were only two responses for this survey question both the two answers and other anecdotal evidence suggests that most countries face a severe capacity deficiency in this area.

There are two important throughput capacities that address what is being taught to student teachers by TEIs on ESD. First, the wide coverage of the ESD thematic topics is equally important to teacher training as it is for formal education. For this capacity, it was exciting to see that in most countries there was a similar or even greater coverage of thematic topics by TEIs as there was in formal education. Second, the provision of instruction in the innovative learning methodologies linked to ESD is also an important capacity, although it should be noted that these methodologies could be taught more generally as the standard practice for teaching rather than just for ESD, and in several aspects this would be even more meaningful. Finally as an output capacity, the opportunity for teachers to share good practices in ESD proves to be an important way to replicate qualitative improvements for ESD.

Non-Formal Education:

There is one main input capacity for non-formal ESD, and this is the existence of clearly identified authorities both at national and local level for non-formal ESD implementation. Based on the survey results though where 6 out of 7 countries have national authorities charged with non-formal ESD implementation but only 3 out of 7 countries have local authorities clearly identified, it appears that nationally directed ESD in the non-formal sector may take precedence as a capacity over locally directed implementation. In regards to throughput capacities for non-formal ESD, first leadership is defined by the existence of a clear vision or strategy outlining the objectives or achievement targets for ESD in the non-formal education sector. Second, the application of good learning methodologies also proves significant, although it should be noted that several of the responses only provided descriptions of basic tools or methods and did not actually describe a learning methodology for non-formal ESD.

Community and Civil Society Participation:

The main input capacity for this sector is clear support by the government for ESD networks, partnerships and relevant civil society organisations. As was noted during the comparative assessment, there are many means in which this support can occur and there is no specific ranking applicable for the various types of support. A seemingly less significant capacity, but one that as an indicator provides good baseline information is the number and types of multi-stakeholder networks and partnerships working on ESD. Good coverage of the SD thematic topics by a country's NGOs and CSOs is an important throughput capacity for this sector, however since the large number and diversity of NGOs in each country – at least in the countries surveyed, ensures a broad coverage of these topics the responses to this question provides little value as an indicator.

The usage of media technologies for ESD and SD awareness raising was rather common across the surveyed countries, thus the capacity that appears more significant in relation to this is if the government provides support and encouragement for using media technologies to promote ESD. Finally, one area that may require further investigation as a potential capacity is the level of involvement in international ESD cooperation and activities. As mentioned earlier, the country selection criteria biased the surveyed countries towards ones that have a high participation rate in such international activities and therefore this does not appear significant based on the findings of this study, however unless universality across the region is demonstrated then this could remain an important capacity.

Private Sector:

As this sector was the one with the lowest involvement rate by the individual countries and also the area of the survey with the lowest response rate, it was difficult to identify the significant capacities in this sector. The only input capacity identified is the existence of organised cooperation between the government and the private sector on ESD. For throughput capacities, there are two identified. First, if businesses provide in-service training and/or continuing professional development on supply chain greening, SCP, environmental management, etc. Second, if businesses support consumer awareness raising programs/initiatives on sustainable consumption option, eco or green products, efficiency issues, etc.

TABLE 10: IDENTIFIED CAPACITIES FOR EFFECTIVE ESD IMPLEMENTATION

	Input Capacities	Throughput Capacities	Output Capacities
National Policy, Mandates and Budget	<ul style="list-style-type: none"> - National SD Plan - Inclusion of education or ESD in National SD Plan - Sectorial Mandates for ESD 	<ul style="list-style-type: none"> - Budget, <i>but considered less significant</i> <ul style="list-style-type: none"> ○ <i>Maybe project based funding for certain sectors</i> 	
National Curriculum	<ul style="list-style-type: none"> - Strategic approach for ESD integration <ul style="list-style-type: none"> ○ <i>Potentially addressing how it achieves pedagogical reform & second-order learning</i> - Authorities with clearly identified roles/ responsibilities for ESD <ul style="list-style-type: none"> ○ Also considering level of role sharing across various departments/ offices 	<ul style="list-style-type: none"> - Structure for inter-departmental/ inter-ministerial coordination of ESD implementation - ESD curriculum development support by country's research community & good mechanisms for incorporating expert knowledge and research into curriculum - Vision for ESD identifying clear learning objectives / achievement targets 	<ul style="list-style-type: none"> - ESD implementation leading to wider educational reform (<i>more as effect indicator than as a capacity for implementation</i>)
Formal Education	<ul style="list-style-type: none"> - Specific teaching strategies or educational theories guiding course content & use of progressive, per grade learning objectives <ul style="list-style-type: none"> ○ But where ESD is based on thematic inclusion in tradition subjects, the strategies and objectives may be for those subjects, not ESD - Support by school administration 	<ul style="list-style-type: none"> - Wide coverage of important ESD themes and topics - Availability of ESD teaching materials <ul style="list-style-type: none"> ○ Supported by use of multi-media formats (electronic versions allow free distribution) - Application of innovative learning methodologies 	<ul style="list-style-type: none"> - Identification of learning outcomes based on distinction of knowledge-based, skill-based, and value-based learning - Clear links between ESD teaching and students' behaviour change <ul style="list-style-type: none"> ○ Both provide benefit if they lead to re-setting of targets to improve outcomes
Teacher Training	<ul style="list-style-type: none"> - Requirement for students teachers to receive ESD training - TEIs providing ESD training - In-Service teachers receiving ESD training & capacity building 	<ul style="list-style-type: none"> - Wide coverage of ESD thematic topics by the TEIs - TEIs teaching innovative learning methodologies 	<ul style="list-style-type: none"> - Mechanisms for teachers to share good practices in ESD teaching
Non-Formal Education	<ul style="list-style-type: none"> - Authorities for non-formal ESD both at national and local levels 	<ul style="list-style-type: none"> - Clear vision or strategy outlining the objectives/ achievement targets for ESD in non-formal education sector - Application of good learning methodologies 	
Community and Civil Society Participation	<ul style="list-style-type: none"> - Government support for ESD networks, partnership and relevant CSOs - Number and type of multi-stakeholder networks/ partnerships active in ESD 	<ul style="list-style-type: none"> - Coverage of ESD thematic topics by NGOs - Government support for using media technologies to promote ESD <ul style="list-style-type: none"> ○ <i>Cooperation in international ESD activities (requires more research on existence across region)</i> 	
Private Sector	<ul style="list-style-type: none"> - Organised cooperation between government and private sector on ESD 	<ul style="list-style-type: none"> - Businesses provide in-service training or continuing professional development on supply chain greening, SCP, environmental management - Businesses provide consumer awareness raising on sustainable consumption options, eco or green products, efficiency issues 	

General Findings and Recommendations

Table 10 (on the previous page) summarises the identification of the important implementation capacities as they are understood from the comparative assessment and capacity analysis of the seven country ESD status reports. As this research was conducted as a broad scoping study to try to identify the important implementation factors for ESD, the focus was rather broad and general. Thus, prior to the direct application of this capacity framework, it will require further piloting and investigation on its usefulness and practical orientation.

Professional Capacity

Besides the implementation capacity identified above, it is also important to consider some of the common barriers for ESD identified during this research. One of the most significant barriers to strong ESD implementation is the limited professional capacity for ESD implementation. This could apply to policy makers, curriculum developers, school administrators, and teachers. For policy making and curriculum development, it has already been noted that stronger links between these professionals and the research community developing expertise and innovations for ESD could create significant benefits. For school administrators, support could be applied as general capacity building in regards to how ESD can be holistically integrated into school management policies.

The lack of professional capacity for teachers though is the most significant of these. If teachers have no knowledge of ESD, especially its procedures/approaches, its knowledge and competencies, and its skill-based and value-based propositions, then it cannot fairly be expected for significant achievements to be made in relation to ESD implementation. In this case, the efforts of Cambodia which is the country with the most recent history of ESD implementation to initiate its process with a strong focus on teacher training is a very significant approach. Teacher training needs to address both pre-service and in-service teachers, and it also needs to ensure coverage of both the thematic/topical approaches to ESD and the pedagogical/methodological approaches to ESD. For in-service training, it is also important to acknowledge the significance of capacity building and knowledge sharing to ensure continual improvement. Another area that is lacking in capacity is how the private sector is engaged in ESD implementation, and in some cases this could also apply to how cooperation with civil society is conducted.

Leadership Capacity

Connected to professional capacity for ESD implementation, the leadership capacity for creating an inspired vision for ESD and the institutional capacity of effectively coordinating implementation are also important capacities in which further strengthening would be beneficial for many countries. This can be strengthened in two different ways. The first is the establishment of a clear vision for ESD with set learning objectives and teaching targets, and it can be further strengthened by ensuring the inclusion of performance standards and

assessment mechanisms. The second is clear distinguishing of roles and responsibilities for ESD implementation, and this can be strengthened by well-coordinated role sharing and the inclusion of defined structures for inter-departmental and inter-ministerial cooperation and coordination on ESD implementation. The process for communicating on ESD and ensuring good understanding of the relevant issues to those responsible for its practice is also an important issue to consider in regards to this coordination.

Integration Approaches for ESD

A further area that deserves some consideration is the integration approaches that are applied by various countries. As mentioned though, it is currently impossible to make any real ranking of these approaches without any correlative relationship demonstrated between various integration approaches and the learning achievements they produce. Although it appears this is being overcome in many countries, the record of many countries' dependency to remodel its earlier practice of environmental education to initiate ESD, or as it is sometimes called 'EE for SD', resulted in very narrow contextualisation for ESD. It is also noted that there is a limit of countries in which it is possible to clearly identify examples of ESD leading to pedagogical reform and qualitative improvements across wider educational systems. To encourage such qualitative reform in education, it is most likely necessary that these countries extend their approach to ESD integration beyond mere inclusion of SD thematic topics in traditional subject, even if that just means including some of the innovative learning methodologies linked to ESD into these subjects too.

No matter the approach an individual country applies for integrating ESD into existing educational practices, a further aspect of ESD integration is to utilise clear teaching strategies, learning methodologies, and progressive learning objectives to ensure its effective implementation. As mentioned during the capacity analysis, it is possible for these components to either be defined specifically in relation to the teaching of ESD as a whole or they could be defined separately in relation to the individual subject areas in which ESD topics are being included. In either case, it is still important that progressive pedagogies, educational theories and learning methodologies elucidated under the ESD framework are properly reflected. This is especially true if a country has identified goals for ESD that extend beyond mere knowledge transfer and first-order learning. An additional way in which this capacity could be supported is through clear linkage between both the desired and achieved learning outcomes (distinguished for knowledge-based, skill-based, and value-based learning) and students' behaviour change with the types of educational approaches and strategies being applied to frame ESD teaching.

Application of ESD to different educational systems

Beyond the identified weaknesses in capacity, there are some general issues that also provide important insights. The first of such issues is in regards to the flexibility of individual countries' educational systems to adopt innovative approaches and encourage educational reform. It was found (only at a precursory level

though) that those educational systems that are well established and have a long history of strong practice are often also some of the most rigid educational systems. Thus, these “strong” systems are often unlikely to integrate new educational concepts into the core of their practice, and topics such as ESD are often relegated to the peripheries of their system. Closely related to this is the central focus of these types of educational systems on preparing students for university entrance examinations and the lack of ESD related materials contained in such exams. Until this process or the content of the entrance examinations change, it may be difficult for ESD to motivate any substantial level of educational reform in this type of system. On the opposite end of the spectrum are educational systems that still have a low-level of development and face serious challenges in meeting basic standards of education. In this type of educational system, resource constraints and a multiplicity of challenges to address often mean that serious integration of ESD is relegated to being a consideration for future educational activities. Though ESD ideally provides an approach for qualitative improvements to educational practice, when a country still identifies the need for urgent, quantitative improvements to the provision of education then it can be understood why the allocation of limited resources is directed in this manner.

Interestingly, it is the educational systems that can be classified as having a middle-level of development that appear most flexible to integrating innovative approaches such as ESD and also strongly focussing on the reform aspects and qualitative improvements this can stimulate across the entire educational system. Educational systems with mid-level development can be understood as having achieved good quantitative coverage of the basic standards for the provision of education, and are also those systems now focussing on qualitative improvements for the practice of education and the learning achievements it supports. For countries with this type of educational system and a desire for improving educational quality, ESD does provide a beneficial tool for reforming educational systems to better address the learning needs and challenges of the next generations. In this manner, a strong desire for qualitative improvements to educational practice and better alignment with the provision of education that prepares learners for the emerging challenges of the real world may be considered important precursors to forming the political motivation for good integration of ESD.

Considering Quantitative and Qualitative improvements to Education

It is worthwhile to continue the discussion on the relationship between quantitative and qualitative educational improvements, as this holds relevance not only to how ESD is addressed but also for how its implementation is monitored and evaluated. The framework of ESD incorporates many innovative and progressive concepts and approaches towards education, including aspects of pedagogy and educational theory, teaching methodologies and strategies, learning objectives and value propositions. Although many of the related concepts are not original to ESD, taken as a set they offer many opportunities for qualitative

enhancement of educational practices and learning achievements. The type of learning enhancements that ESD can support include improvements to life-long learning skills, critical reflexivity of students, cooperative learning relationships, holistic interpretations of knowledge, and it can encourage the types of understanding about the world we live in that will allow the next generation to better address and deal with the emerging challenges of this generation.

Individual attributes of these potential enhancements can be linked to specific concepts or approaches contained in the ESD framework. For example, critical reflexivity can be linked to experiential, action-oriented and problem-based learning approaches, while cooperative learning relationships can be linked to student-centred, interactive-enquiry based approaches and the application of local or community-based curriculum components. However, it is difficult to disaggregate these types of qualitative improvements in actual practice, and it is also very difficult to assess them in a quantitative manner. Even the most robust performance based testing struggles to capture these types of conceptual learning skills that ESD can enhance. This issue can create difficulties for gaining the political motivation necessary to ensure ESD implementation as many policy makers are reluctant to commit significant resources to initiatives that are unlikely to result in notable quantitative improvements.

It is important to recognise that even though it is difficult to target clear quantitative improvements as a primary outcome from implementing ESD, there are many secondary impacts that can occur from the qualitative enhancements supported by ESD that allow for quantitative measuring. To put this more plainly, by integrating ESD's innovative and progressive concepts into the educational system, this can achieve multiple qualitative enhancements that will thus support improved learning achievements. For example, educational approaches which are student-centred and provide action-oriented learning experiences can lead to increased student engagement and relevance, which are then important characteristics for improving student retention rates. Students that gain better learning skills of critical reflection, whole systems thinking, and integrated problem solving are also likely to perform better throughout their educational tenure and even in performance based assessment. Future research could further support this understanding by drawing better links between qualitative educational enhancements and the corresponding quantitative improvements, nonetheless it is important to recognise that in general qualitative enhancements support increased achievement across important quantitative educational statistics. Furthermore, as we consider how education can strengthen our ability to achieve sustainable development, the progressive educational approaches within the ESD framework provide a model for reconceptualising the purpose of education to move beyond traditional knowledge transfer and rote learning to a system that actively engages learners in a process of social learning and reflective action for transformative change.

APPENDIX

Appendix A: Country Survey – as provided to the National ESD Focal Points for status reporting



MONITORING AND EVALUATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ASIA-PACIFIC **COLLABORATIVE RESEARCH TO ASSESS THE IMPLEMENTATION OF THE UN DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ASIA-PACIFIC THROUGH THE DEVELOPMENT OF REGIONAL INDICATORS OF ESD**

Country Survey for National ESD Focal Points on

Current Implementation Status of Education for Sustainable Development

Dear Colleague,

On behalf of the research team members from the Education for Sustainable Development programme at United Nations University Institute of Advanced Studies (UNU-IAS) and the Governance and Capacity group at the Institute for Global Environmental Strategies (IGES), I would kindly like to express my gratitude for your willingness to cooperate with and participate in the reporting of national Education for Sustainable Development (ESD) implementation status in the hope of developing appropriate indicators to use for the long-term monitoring and evaluation of ESD. Your contribution will provide significant input into the development of indicators for ESD to be utilised in the monitoring and evaluation of the implementation of the Decade of Education for Sustainable Development (DESD) in Asia-Pacific, and thus also contribute to formulating what should be the new efforts and initiatives on ESD following the end of the decade and the concluding meeting in Japan in 2014.

Please allow me this opportunity to provide some additional instructions regarding the completion of this country survey on current ESD implementation (*below*). If you have any further questions regarding the completion of the survey, please feel free to contact me directly.

Kind regards,
Dr. Robert J. Didham
Education Policy Specialist
Institute for Global Environmental Strategies

Instructions for Survey Completion

The research process on developing ESD indicators is currently in a scoping phase where we are trying to identify the important context, factors and leverage points that commonly lead to successful ESD implementation. Due to this approach, the survey framework covers a diverse set of sectors including: national curriculum, formal education, teacher training, non-formal education, community & civil society, and the private sector. The framework also addresses a variety of capacities in each of these sectors that includes the inputs, throughputs and outputs of each sector.

The diversity of this survey may require responses from more than one individual or even more than one ministry to properly address all of the areas. If possible, the coordination of such a cooperative response would be greatly appreciated. Please provide as much relevant information as available for each question where appropriate. However, the research team is also well aware that some of the information for this survey may either not exist or may not be possible to access. This in itself is an important finding for the research as we need to know what information can be reported to properly develop relevant indicators. Finally, as you complete this survey, if certain questions either seem specifically key in addressing ESD implementation in your country or completely irrelevant, please make a note of this as we will discuss such issues during our M&E of ESD capacity building workshop.

In terms of how you address the concept of Education for Sustainable Development, we would like you to reflect your country's own understanding of the concept. The research team is aware that depending on the specific country ESD is defined in different ways and sometimes even referred to by different titles (i.e. Education for Sustainability, Eco-education, or Environmental Education for Sustainable Development). Please feel free to also reflect on activities currently occurring in the education system in your country that do address key aspects of ESD even if they do not receive the specific title. At the same time, please keep in mind in how you conceptualise such practices that we do need to understand if your country is actively pursuing and incorporating ESD or if they are just coincidentally addressing certain aspects similar to ESD.

The survey format has been provided to you in both an Adobe PDF version and a Word 2007 DOCX version. Both formats provide an electronic form filling feature which will hopefully allow for easier completion of the survey. Please follow the specific instructions at each question for the appropriate response. In general, there are three response types: drop down boxes for quantified responses, tick boxes for yes/no responses, and text boxes for open-ended answers. Finally, please note the specific instructions below regarding those answers that a response is not available for. As mentioned above, non-answers are important for this research, thus it is necessary for us to understand why it was not possible to answer individual questions.

Regarding Non-Answers or Unavailability of Information

Please note that the researchers understand that due to the wide scoping nature of this survey, it may not be possible for you to access the information necessary to complete all questions of this survey. This is completely expected and acceptable, however we want to make sure that your reason for not answering a given question is properly understood so that we can better develop relevant and reportable indicators.

With this in mind, please use the following coding to distinguish the various caveats for why it was not possible to answer a question (*which is also at the bottom of each page as a reminder*):

NA 1 = Negative Response – The requested policy, programme or initiative that is being asked about does not currently exist.

NA 2 = Information Unavailable – It is not possible to find or easily access the information that is required to answer this question.

NA 3 = Non-Applicable – The question does not apply to the nature of the current governance structures, institutional frameworks or educational systems in our country.

NA 1 = negative response (does not exist); **NA 2 = information unavailable** (not possible to find out answer);
NA 3 = non-applicable (does not apply in the country's context)

National Policy Mandates on Education for Sustainable Development

Does your country have a national implementation plan for sustainable development? [NC1.1]
Choose an item: YES or NO

If yes, does the national SD plan address ESD or the inclusion of sustainable development into educational activities? [NC1.1]
Choose an item: YES or NO

What are the main (policy) mandates for the incorporation of ESD into the national curriculum?
(please identify relevant policies by name, date and issuing agency; if possible please also provide citation of relevant text mandating ESD) [NC1.1]

Click here to enter text.

Do the above listed mandates specifically address the promotion of ESD within the following areas?
(please check all that apply, and leave those boxes blank for those that do not apply)

If information is not available, please select reason:

<input type="checkbox"/> National Curriculum [NC1.1]	<input type="checkbox"/> Teacher Education Institutes [TT1.1]
<input type="checkbox"/> Primary Education [FE1.1]	<input type="checkbox"/> In-Service Teacher Training [TT2.3]
<input type="checkbox"/> Secondary Education [FE1.1]	<input type="checkbox"/> Civil Society (NGOs) [CS1.1]
<input type="checkbox"/> Higher Education	<input type="checkbox"/> Community Participation [CS1.1]
<input type="checkbox"/> Non-Formal Education [NF1.1]	<input type="checkbox"/> Private Sector (Businesses and Corporations) [PS1.1]

Budget and Financing for ESD

What is the amount of budget allocated for ESD implementation?
(can be provided as either total amount or as percentage of overall educational expenditure) [NC1.2]

**please indicate budget amount and currency type*

Click here to enter text.

Is the allocation of budget specified for any of the following areas?
(please check all that apply, and leave those boxes blank for those that do not apply)

If information is not available, please select reason:

	<u>Total amount per area (or as percentage of ESD expenditure)</u>
<input type="checkbox"/> National Curriculum [NC1.2]	Click here to enter text.
<input type="checkbox"/> Primary Education [FE1.2]	Click here to enter text.
<input type="checkbox"/> Secondary Education [FE1.2]	Click here to enter text.
<input type="checkbox"/> Higher Education	Click here to enter text.
<input type="checkbox"/> Non-Formal Education [NF1.2]	Click here to enter text.
<input type="checkbox"/> Teacher Education Institutes [TT1.2]	Click here to enter text.
<input type="checkbox"/> In-Service Teacher Training [TT1.2]	Click here to enter text.
<input type="checkbox"/> Civil Society (NGOs) [CS1.2]	Click here to enter text.
<input type="checkbox"/> Community Participation [CS1.2]	Click here to enter text.
<input type="checkbox"/> Private Sector (Businesses and Corporations) [PS1.2]	Click here to enter text.

Do individual schools receive budget specifically for ESD? [FE1.2]

Choose an item: YES or NO

If yes, what is the amount of funding each school received for ESD? [FE1.2]

Click to enter. total amount (please note currency)

Click to enter. amount per student (please note currency)

Which authorities control the distribution of ESD funding to individual schools (i.e. Ministry of Education, Ministry of Environment, Local Government, School Board, etc.)? [FE1.2] *(please identify below)*

Click here to enter text.

NA 1 = negative response (does not exist); **NA 2 = information unavailable** (not possible to find out answer);
NA 3 = non-applicable (does not apply in the country's context)

National Curriculum

Status Indicators (NC 1)

To what extent has the integration of ESD into the curriculum achieved the objectives of the country's policy mandates for ESD (as previously identified on page 2)? [NC1.3]

Choose an item: Percentage of Achievement

How is ESD being integrated into the national curriculum (for example, is it as an "add-on" subject or is it mainstreamed as a component of traditional subjects)? [NC1.3] *(please describe below)*

Click here to enter text.

Does ESD's inclusion into the curriculum reflect and build on previous educational policies/strategies (i.e. has ESD been brought from periphery into mainstream education)? [NC1.4]

Choose an item: YES or NO

If yes, how has this been accomplished (and with what previous educational policies has it been linked)? [NC1.4] *(please describe below)*

Click here to enter text.

At the level of the national government, which specific agencies/institutions are responsible for the implementation of ESD and are their specific roles/responsibilities clearly defined? [NC1.5] *(please identify and list below: agency | responsibility)*

AGENCY / AUTHORITY	ROLES AND RESPONSIBILITIES
Click here to enter text.	Click here to enter text.

Facilitative Indicators (NC 2)

Does a formal structure for interdepartmental cooperation on ESD exist: [NC2.1]

(i) **within your national government:**

Choose an item: YES or NO

(ii) **between your national government and foreign governments (or international agencies):**

Choose an item: YES or NO

Is the curriculum development process supported by available ESD research and expertise? [NC2.2]

Choose an item: YES or NO

If yes, how is this achieved? *(please describe below)*

Click here to enter text.

Is the country's research community responding to the needs or demands for ESD education and curriculum development? [NC2.2]
 Choose an item: YES or NO

If yes, how is this achieved? *(please describe below)*

Click here to enter text.

What are the learning objectives and achievement targets for ESD outlined by the government? [NC2.3]
(please identify below)

Click here to enter text.

Is there a clear path for decentralizing ESD from the curriculum to classroom materials/ course contents? [NC2.4]
 Choose an item: YES or NO

Is ESD in the curriculum being communicated and explained to the people who have the responsibility to implement it? [NC2.4]
 Choose an item: YES or NO

Effect Indicators (NC 3)

Has the inclusion of ESD led to wider educational or curriculum reform? [NC3.1]
 (i.e. systemic change such as incorporation of interdisciplinary teaching approaches, team building activities, more action-experiential learning, skill development, etc.)
 Choose an item: YES or NO

If yes, please provide examples: *(below)*

Click here to enter text.

Are there feedback mechanisms in place that support further ESD curriculum reform based on monitoring and evaluation of existing ESD implementation? [NC3.2]
 Choose an item: YES or NO

If yes, what are these mechanisms? *(please identify below)*

Click here to enter text.

NA 1 = negative response (does not exist); **NA 2 = information unavailable** (not possible to find out answer);
NA 3 = non-applicable (does not apply in the country's context)

Formal Education

Status Indicators (FE 1)

Is the framing of course content and teaching materials for ESD guided by specific teaching strategies and/or educational theories? [FE 1.3]

Choose an item: YES or NO

If yes, please explain how and by what? (below)

Click here to enter text.

Is the ESD curriculum and course content per grade guided by progressive learning objectives? [FE 1.4]

(i.e. Are the students' ESD knowledge and skills expected to continuously develop as they progress through educational grades based on what is taught at each level?)

Choose an item: YES or NO

Do (some) schools adopt a “whole-school management approach” to ESD? [FE 1.5]

(including examples like eco-schools, green schools, sustainable schools, environmental schools initiatives, etc.)

Choose an item: YES or NO

If yes, how many schools?

Click to enter total number of schools applying this approach

Click to enter as percentage of total number of schools in country

Is there positive reinforcement by the school board (or other relevant authority) for ESD implementation in the classroom? [FE 1.6]

Choose an item: YES or NO

If yes, in what way is this achieved? (please describe below)

Click here to enter text.

What role does the school administration play in bringing ESD teaching into the schools? [FE 1.7]

(please explain below)

Click here to enter text.

Facilitative Indicators (FE 2)

Are the following important Sustainable Development thematic topics covered by ESD? [FE 2.1]
(check all that apply)

If information is not available, please select reason:

Climate Change

Disaster Risk Reduction

Mitigation and Adaptation

Sustainable Consumption and Production

Indigenous Knowledge

Cultural Values and Ethics underpinning Sustainable Lifestyles

National Visions and Plans for Sustainable Development

Are ESD teaching materials widely available to schools? [FE 2.2]
 Please choose: Average amount of schools with ESD teaching materials

Are ESD teaching materials utilising multi-media formats? [FE 2.2]
 Choose an item: YES or NO

If yes, what kind of media formats? *(please identify below)*

Click here to enter text.

Is ESD teaching applying innovative learning methodologies that have been identified as a core aspect of ESD
 (such as, critical reflection and action learning, cooperative learning, problem solving, experience-based/field-based learning, etc)? [FE 2.3]
 Choose an item: YES or NO

What ESD teaching approach is being used in the classroom? [FE 2.4]
(check all boxes that apply, even if they are seemingly opposite approaches)

If information is not available, please select reason:

Disciplinary VS. Inter-disciplinary

Topical VS. Integrated

Knowledge-based VS Practice-based

NA 1 = negative response (does not exist); **NA 2 = information unavailable** (not possible to find out answer);
NA 3 = non-applicable (does not apply in the country's context)

Effect Indicators (FE 3)

Are there practice standards for ESD teaching? [FE 3.1] Choose an item: YES or NO
Are there auditing mechanisms for ESD teaching? [FE 3.1] Choose an item: YES or NO
What are the major learning outcomes currently being achieved by ESD (giving specific consideration to knowledge-based learning, skill-based learning, and value-based learning)? [FE 3.2]
(i) For Knowledge-Based Learning: <i>(please identify examples below)</i>
Click here to enter text.
(ii) For Skill-Based Learning: <i>(please identify examples below)</i>
Click here to enter text.
(iii) For Value-Based Learning: <i>(please identify examples below)</i>
Click here to enter text.
Giving consideration to the potential link between ESD and changes in students' attitudes/ behaviours, are there identifiable links between ESD implementation and increases in pro-environmental practices and behaviours in the schools? [FE 3.3] Choose an item: YES or NO
If yes, please provide examples: <i>(below)</i>
Click here to enter text.

Teacher Training

Status Indicators (TT 1)

Is there a mandate for all current student teachers (i.e. teacher trainees) to receive training in ESD? [TT 1.1] Choose an item: YES or NO
How many of the teacher education institutions (TEIs) in your country are providing training on ESD? [TT 1.3] Please choose: Average amount of TEIs providing ESD
Are student teachers being inspired on ESD through engagement with SD experts and professionals and hence receiving relevant and practical experience? [TT 1.4] Choose an item: YES or NO

Facilitative Indicators (TT 2)

Are student teachers learning about the following important Sustainable Development thematic topics? [TT 2.1]
(check all that apply)

If information is not available, please select reason:

- Climate Change
- Disaster Risk Reduction
- Mitigation and Adaptation
- Sustainable Consumption and Production
- Indigenous Knowledge
- Cultural Values and Ethics underpinning Sustainable Lifestyles
- National Visions and Plans for Sustainable Development

Are student teachers learning about the innovative learning methodologies that have been identified as a core aspect of ESD (such as, critical reflection and action learning, cooperative learning, problem solving, experience-based/field-based learning, etc)? [TT 2.2]

Choose an item: YES or NO

Percentage of in-service teachers who have received training in ESD? [TT 2.3]

Click to enter % of in-service teachers with ESD training

Effect Indicators (TT 3)

Are there established mechanisms for teachers to share good ESD practices? [TT 3.1]

Choose an item: YES or NO

If possible, please provide examples: (below)

Click here to enter text.

Are teachers being assessed on the quality of their ESD teaching? [TT 3.2]

Choose an item: YES or NO

Non-Formal Education

Status Indicators (NF 1)

How many Learning Centres are there for environmental education and/or sustainable development (i.e. ESD) in your country? (both government supported and independent/civil society supported are appropriate) [NF 1.3]

Click to enter number of EE, SD and ESD learning centres

NA 1 = negative response (does not exist); NA 2 = information unavailable (not possible to find out answer);
NA 3 = non-applicable (does not apply in the country's context)

Is there an authority charged with promoting ESD in the non-formal sector (at national and local levels)? [NF 1.4] <i>(please answer and identify authority, below)</i>	
YES/NO	IF YES, Who is the authority?
(i) In the National Government: Choose an item: YES or NO	Click here to enter text.
(ii) In the Local Government: Choose an item: YES or NO	Click here to enter text.

Facilitative Indicators (NF 2)

Is there a vision or strategy outlining the objectives to be achieved by ESD in the non-formal education sector? [NF 2.1] Choose an item: YES or NO
If yes, what are the objectives? <i>(please identify below)</i> Click here to enter text.

How often do government agencies conduct initiatives/events to engage citizens in awareness raising and outreach about sustainable development issues? (frequency, ex. 1 per month, 4 per year, etc.) [NF 2.2] Click to enter <u>frequency of government-led events engaging citizens in SD outreach and awareness raising</u>
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What are the learning methodologies and approaches that are used in non-formal education to achieve effective implementation of ESD? [NF 2.3] <i>(please identify below)</i> Click here to enter text.
--

Community and Civil Society

Status Indicators (CS 1)

How many NGO / multi-stakeholder networks, consortiums, and partnerships on ESD are there in your country? [CS 1.3] Click to enter <u>approximate number of networks, consortiums, and partnerships on ESD</u>
If possible, please list the relevant networks and partnerships on ESD: <i>(below)</i> Click here to enter text.

Does the government support and cooperate with these ESD-linked networks and partnerships? [CS 1.4]
 Choose an item: YES or NO

If yes, how does the government support or cooperate with them? (please explain below)

Click here to enter text.

Is there a mandate for citizen participation in SD Planning? [CS 1.5]
 Choose an item: YES or NO

How often are citizens provided the opportunity to participate in SD planning? [CS 1.5]
 (frequency, ex. 1 per month, 4 per year, etc.)

Click to enter frequency of citizen participation in sustainable development planning

Facilitative Indicators (CS 2)

What Sustainable Development themes are covered by the NGOs? [CS 2.1] (check all that apply)

If information is not available, please select reason:

Climate Change

Disaster Risk Reduction

Mitigation and Adaptation

Sustainable Consumption and Production

Indigenous Knowledge

Cultural Values and Ethics underpinning Sustainable Lifestyles

National Visions and Plans for Sustainable Development

Others: [Click here to enter text.](#)

Is your country involved in international ESD activities/cooperation? [CS 2.2]
 (could include government, academia, civil society, etc)

Choose an item: YES or NO

Please provide main examples if possible: (below)

Click here to enter text.

NA 1 = negative response (does not exist); **NA 2 = information unavailable** (not possible to find out answer);
NA 3 = non-applicable (does not apply in the country's context)

Are media technologies being used to promote ESD and awareness raising for sustainable development? [CS 2.3]

Choose an item: YES or NO

If yes, please provide examples of the types of media technologies that are used: *(below)*

Click here to enter text.

Does the government support/promote the use of media technologies for ESD? [CS 2.3]

Choose an item: YES or NO

Private Sector

Status Indicators (PS 1)

Are there existing ESD networks/partnerships for cooperation between: [PS 1.3]

(please answer and provide example, below)

YES/NO	IF YES, Provide examples:
(i) Between government and companies: Choose an item: YES or NO	Click here to enter text.
(ii) Between companies and consumers: Choose an item: YES or NO	Click here to enter text.

Does the government initiate or promote training activities for business leaders on SD? [PS 1.4]

Choose an item: YES or NO

Facilitative Indicators (PS 2)

Are business or business forums providing in-service training or continuous professional development (CPD) on environmental management, supply chain greening and/or sustainable consumption and production? [PS 2.1]

Choose an item: YES or NO

Are business or business forums providing consumer awareness raising programs/initiatives on greener/sustainable consumption, eco-products, efficient products, etc? [PS 2.2]

Choose an item: YES or NO

Are there any innovative examples of the private sector (i.e. businesses and companies) engaging with or participating in ESD activities in your country? [PS 2.2]

Choose an item: YES or NO

If yes, please provide examples: *(below)*

Click here to enter text.

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