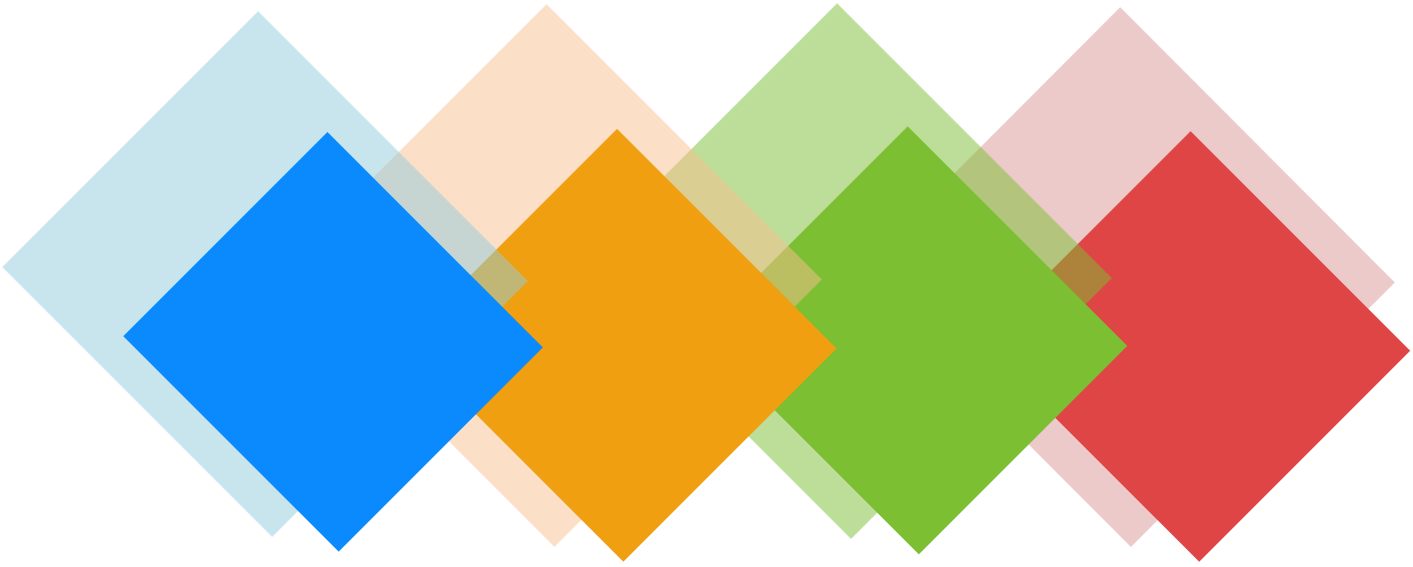
EXECUTIVE SUMMARY OF RESEARCH ON:

MONITORING & EVALUATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

In the Asia-Pacific Region



Collaborative Research

conducted by

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Executive Summary of Research on: Monitoring & Evaluation of Education for Sustainable Development In the Asia-Pacific Region

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ISBN: 978-4-88788-138-9

Printed in Japan
Printed on recycled paper

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Abstract

The *Executive Summary of Research on Monitoring and Evaluation of Education for Sustainable Development in the Asia-Pacific Region* presents an overview of the research, findings and recommendations from a collaborative research project that was initiated by the United Nations University Institute of Advanced Studies (UNU-IAS) and the Institute for Global Environmental Strategies (IGES). The first research phase of this project was conducted from July 2011 to January 2013 and was structured to provide multi-country scoping research to identify the important factors and leverage points for both Education for Sustainable Development (ESD) implementation and practice from which appropriate ESD indicators could then be elaborated. During this scoping phase, research was conducted in two parallel processes across a total of nine countries in East and Southeast Asia. First, national ESD focal points were targeted for participation in a country survey regarding the national context of ESD implementation. Second, the Regional Centres of Expertise (RCEs) were targeted to provide good practice case studies on ESD learning performance. The findings from these research activities have been presented in three policy reports (see back cover for more details): 1) *Education for Sustainable Development Country Status Reports,* 2) *Assessment of Learning Performance in Education for Sustainable Development,* and 3) *Monitoring and Evaluation of Education for Sustainable Development.*

This summary begins with an overview of the full research project, its goals and objectives, and then a brief description of methodologies utilised in this research is presented. Next, a general discussion of the background and history of ESD is presented with a specific focus on the framing of ESD under the framework for the UN Decade of ESD (2005-2014). This is followed by an explanation of the importance for conducting monitoring and evaluation of ESD and a discussion of some of the factors and challenges faced in educational assessment especially as it applies in the context of ESD.

At this point the summary turns to the main findings delivered in the three reports, and it starts with an explanation of the findings from the ESD country status reports. In this work, a comparative assessment of ESD implementation status in seven countries was conducted to identify ESD implementation capacities. This led to the articulation of thirty-two capacities across seven different ESD-related sectors that support effective implementation. Furthermore, recommendations were provided for strengthening professional capacity, leadership capacity, integration approaches for ESD, and application of ESD to different educational systems. The second set of findings comes from the study on assessing ESD learning performance. In this work, good practice cases from ten Regional Centres of Expertise (RCEs) are presented and analysed to identify the important educational contents and learning processes that support good learning outcomes and achievements for ESD. Based on the approaches to ESD practice utilised by the RCEs, five good practice models are identified as mechanisms to strengthen ESD cooperation and implementation. Further analysis of the progress of the learning methods, activities and outcomes of RCE cases led to the identification of four distinct aspects of an overall ESD learning performance framework with each aspects including several specific characteristics. Finally, this report also provided several recommendations for facilitating the translation of the ESD agenda at the local level into a larger global educational framework.

The final two parts of this summary are based on the work from the third report. A description of several methods and approaches for ESD assessment are described, along with a clarification of the criteria that must be considered when conducting monitoring and evaluation activities. The major outcome of this first scoping research phase of the project is the development of a systematic and holistic framework for conducting monitoring and evaluation of ESD. The proposed framework is based on a multi-tiered indicator and reporting process. Three tiers are proposed with each tier having the respective targets: 1) addressing the capacities for effective ESD implementation in a quantitative manner, 2) linking the implementation capacities and the learning performance characteristics to address delivery of qualitative learning benefits of ESD, and 3) provision of performance based testing of learning outcomes.

I. Overview of Research: Background and Objectives

The United Nations University Institute of Advanced Studies (UNU-IAS) and the Institute for Global Environmental Strategies (IGES) initiated a collaborative research project in July 2011 on **Monitoring and Evaluation of Education for Sustainable Development** (M&E of ESD) for 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 gather data for national ESD status reports; 2) To collect case reports on ESD good practice and learning performance; 3) To identify leverage points, success factors and barriers to ESD implementation and practice; 4) To develop a case study framework on effective ESD learning performance; 5) To develop an ESD monitoring and evaluation framework, 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, and at that time efforts will need to be made to assess the impacts of DESD and to identify mechanisms for further improvement of ESD into the future. There is currently a large amount of anecdotal evidence about the successes achieved under the DESD framework, but there is still no systematic way to evaluate the status of ESD implementation across multiple countries. The development of systems to monitor and evaluate ESD performance is also called for as one of the seven target implementation goals[1] of the Decade.

With this in mind, the research project was established to first 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. The initial eighteen months of the project was designed to provide multi-country scoping research to identify the important areas for which indicators should be developed. During this scoping phase, research was conducted across a total of nine countries in East and Southeast Asia. The main objective of this research phase 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 from which indicators could be elaborated.

The strategy for this research was developed to take account of both the quantitative and qualitative nature of educational assessment. First, national ESD focal points were targeted for participation in a country survey regarding the national context of ESD implementation. Second, the Regional Centres of Expertise (RCEs) were targeted to provide good practice case studies on ESD learning performance. However, this duality 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 inputs should ideally lead to increased quality and

[1] Seven Key Implementation Strategies of UN DESD: "vision-building and advocacy; consultation and ownership; partnerships and networks; capacity building and training; research and innovation; use of information and Communication Technologies (ICTs); and monitoring and evaluation"; UNESCO (2005: p.17) "*United Nations Decade of Education for Sustainable Development (2005-2014) – International Implementation Scheme*"; Paris: UNESCO.

quantity of outputs). The findings from both research tracks were triangulated during a further investigation of important components and criteria for a holistic M&E of ESD framework which was strengthened through the addition of a third research format based on multi-stakeholder participation and cooperative inquiry. Throughout the research phase, three expert consultations and two reporting and capacity building workshops were held. These events served as valuable opportunities for collective testing and application of the findings, proposals and recommendations being generated during this research process.

The scoping research phase of this project resulted in three main outputs. First, a compilation and comparative evaluation of ESD country status reports presents the current status of ESD implementation in seven 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 discussion of approaches to educational assessment is presented and compared with the identified factors for ESD implementation and performance from the previous two reports to build an overall framework for the holistic monitoring and evaluation of ESD.

II. Research Methodologies

As the initial focus of this research project was oriented to provide broad scoping research, the desire was to identify both the important capacities for effective ESD implementation and the specific factors/characteristics that support strong learning outcomes in the Asia-Pacific region. The expectation was that such findings would then lend themselves to development of an appropriate framework for monitoring and evaluation of ESD practice and performance in the region, and this in turn would create the necessary structure for elaborating good ESD indicators.

To complement this, the research approach was informed by the traditions of pragmatism and critical praxis aiming to create clear linkages between theory and practice. The methodological framework was based on a mixed-methods research strategy and utilised mixed approach design to draw on multiple forms of information and knowledge types regarding ESD implementation, practice and performance. Mixed-methods enhances construct validity and methodological triangulation in order to substantiate research findings. The research design was guided by grounded theory and the application of selective coding. This is an appropriate approach when research is not based on set hypothesis testing, and instead can be used to identify primary factors of influence. For the quantitative data collection, 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 M&E of ESD process has also been structured to serve as a capacity development mechanism with the understanding that monitoring and evaluation establishes the necessary opportunity for critical reflection within an implementation process to transform it from a linear programme into an active, experiential learning cycle. In this light, M&E of ESD should engender both reflection and reorientation of ESD practices and concepts, wider educational systems, and individuals' own behaviours and understandings in order to achieve on-going relevance and effectiveness for ESD. Monitoring and evaluation is hence the foremost strategy to ascertain the necessary changes and impacts for achieving the goals of DESD.

III. Background on Education for Sustainable Development

Definition of *Education for Sustainable Development*

(as defined by UNESCO in *The International Implementation Scheme for the Decade in brief* (2006: 5))

- 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.

Education for Sustainable Development (ESD) refers to the provision of education and learning opportunities to enhance learners' abilities to effectively understand and participate in the pursuit of sustainable development. The importance of education as a means to strengthen the advancement of sustainable development was originally recognised during the United Nations Conference on Environment and Development (UNCED, held in Rio de Janeiro, 1992) and enshrined in chapter 36 of *Agenda 21* (1992). Ten years after UNCED, at the World Summit on Sustainable Development (WSSD, held in Johannesburg, 2002) a proposal for a Decade of ESD was made and included in the Johannesburg Plan of Implementation which went on to remind the world of the place of education and learning in the transition towards sustainability.

This proposal was followed by the UN General Assembly adopting resolution 57/254 in December 2002 for the establishment of a global Decade of ESD (DESD) commencing in 2005 and ending in 2014. UNESCO was subsequently mandated as the lead agency to manage the implementation of the decade with the overall goal of integrating the principles, values and practices of sustainable development into all aspects of education and to encourage changes in individual behaviour, organisational and institutional practices that allow for a more sustainable and just society for all. 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 relevant international agencies, national governments, and civil society organisations.

Education for Sustainable Development itself has a long and rich history, and it is promoted as an important social process to engender a culture that is respectful to the core principles of sustainable development. 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).

Table 1: The Four Thrusts of DESD

Promote and Improve the Quality of Education: The aim will be to refocus lifelong education on the acquisition of knowledge, skills and values needed by citizens to improve their quality of life.	***Reorient the Curricula:*** From pre-school to university, education must be rethought and reformed to be a vehicle of knowledge, thought patterns and values needed to build a sustainable world.
Raise Public Awareness of the Concept of Sustainable Development: Raising awareness will make it possible to develop enlightened, active and responsible citizenship locally, nationally and internationally.	***Educate the Employed:*** Continuing technical and vocational education of directors and workers, particularly those in trade and industry, will be enriched to enable them to adopt sustainable modes of production and consumption.

(UNESCO, 2006: 5)

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 applications. However, this is also considered one of the assets of ESD as it allows for more versatile contextualisation both at national and local levels.

With its ultimate goal being sustainability-competent societies striving to live within the carrying capacity of the planet, implementation of ESD that is culturally-relevant and locally appropriate has taken place across scales at local, national, regional, international levels and at the interplay between these different levels. At the national level, governments have been taking measures to integrate ESD elements into national educational policies and guidelines, curricula and assessments particularly in relation to formal education. Regionally, several Asia-Pacific ESD initiatives to help create and foster regional partnerships and networks on ESD, to facilitate the exchange of knowledge and experiences, and for future cooperation on regional coordination of ESD exist. At the level of international policy development, the UN DESD with implementation led by UNESCO has become an example of how international momentum is being upheld to promote ESD. The interplay between these different levels due to the global nature of current human-environment system challenges and the simultaneous expression in local practice has led to the conglomeration of rich insights, practice and expertise in ESD across local, national, regional and international institutions.

Features of ESD include support of lifelong learning skills, holism and interdisciplinarity, and a focus on critical inquiry, reflective thinking, systemic thinking and problem-solving. It is multi-methodological, involves different pedagogies, and is concerned with applicability to daily life settings. It is argued that ESD must provide more than the mere transfer of knowledge on sustainable development thematic topics, as it must also address 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 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 cornerstones 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.

Implementing ESD has been challenging on several fronts with the most significant being the conceptual challenge currently facing ESD being whether it should focus on capacity building and critical thinking or aim for change in leaners' behaviours. Other challenges include: 1) Finding appropriate methods and tools like indicators to measure ESD progress or otherwise are both very challenging and critical; 2) The difficulty in identifying common ground between the various actors conducting ESD-related work across different sectors; 3) Identifying specific projects and activities from the onset to guarantee the maintenance of momentum from launch and initial activity; 4) The challenge of transforming existing approaches to education towards ESD and the complexity of its introduction at the national and local level; 5) Lack of cooperation and partnerships between stakeholders in research and development activities; 6) Inadequate number of qualified and committed ESD personnel to coordinate the strategies and programmes of the ESD implementation; 7) The danger of ESD losing its priority status among most donor countries/agencies regarding funding; and 8) With regard to the mental and physical structures of education, economic and the socio-politics, the major challenge whether the move towards ESD should be an incremental reorientation of education towards sustainability or a paradigm shift.

IV. Importance of Monitoring and Evaluation of ESD

As the end of the UN Decade of Education for Sustainable Development draws near, the establishment of a systematic approach to document and assess the progress in implementing ESD becomes increasingly essential. Since the launch of the DESD to achieve the goal of embedding ESD in all learning spheres, attempts have been made to provide exemplars in the forms of capacity strategies, mechanisms, methods, practices and initiatives across various scales (Tilbury, 2010). Current reporting on ESD implementation is generally anecdotal in nature and lacks the formal structure needed to identify change that has occurred over time. Although examples of good practices in ESD abound, a more protracted approach is required to identify the main success factors and barriers in ESD implementation and practice, if we are to properly consider the future needs for improving ESD beyond the end of the Decade.

Evaluating the current status of ESD implementation in the context of how education has contributed to sustainability and to systematically identify methods to further mainstream these important learning processes is a major challenge. An M&E of ESD process can help to monitor progress, to learn and improve from existing experience, and to influence future policy and practice. In addition to giving stakeholders the opportunity to engage in DESD activities, M&E helps to guarantee continuous relevance and effectiveness of ESD efforts, reorient DESD programmes, increase understanding of ESD progress, and improve decision making and action for the DESD.

The assessment of ESD is open to several different trajectories, and selection of one (or multiple) of these trajectories should be made through a clear evaluation of the benefits and deficiencies of each approach. Consideration of these compromises is especially necessary when the target is the establishment of a definitive set of ESD indicators or reporting criteria for the systematic monitoring and evaluation of ESD implementation, performance and/or achievements. Before identifying the structure of an ESD M&E system, the desired scope, breadth and depth of the reporting should be defined. Next, it is important to clarify what is the purpose of monitoring and evaluation and who will be the target user of the generated information, i.e. what is to be learned from the M&E process.

V. Factors and Challenges for Consideration in ESD Assessment

ESD assessment must take into consideration the complexity of its nature – i.e. assessment of ESD content and learning process in addition to outcome assessment while also underpinned by the multiple dimensions of sustainable development. To be able to establish an effective framework for M&E of ESD, it is appropriate to take into consideration the features of the existing forms of educational assessment. The complex nature, pedagogies and learning objectives of ESD is however at odds with the standard assessment and evaluation systems pertaining to conventional education due to its inherently narrow focus and reliance on test results, while methods that incorporate a holistic view of qualitative performance in education are encouraged.

- In addition to being complex, ESD has a longer time perspective in the context of learning with equal importance given to both content and process. Equal attention should be paid during assessment to the learning outcomes as well as the experiences that lead to those outcomes. Formative or summative assessment would therefore have to be applied as and when appropriate. Assessment that is on-going and consistent, rather than irregular, will work best.
- To address the definitional complexity of ESD and the domain specificity of its users/actors, multiple measurements representing assessment modes or sample content from multiple domains is appropriate to allow for better triangulation of results. The complexity of tasks should however commensurate with students age and level of cognitive ability (Lai and Viering, 2012).
- Due to its participatory nature, in ESD assessment the involvement of all stakeholders from the entire educational community will ensure a wider and deeper improvement in assessment, although it will be more arduous to execute.
- Maximisation and efficiency of assessment is directly linked to how clearly and explicitly the purposes for the existing programs it seeks to improve are stated (Pusateri, 2009).
- Due to its complexity with regard to scope and content, the level of "sophistication" of ESD assessors needs to be considerably high with regard to knowledge, skill and experience.
- Evaluation of the efficacy of existing tools and strategies already in use can support the development of a systematic M&E of ESD approach that is relevant across countries and contexts.

VI. Findings from ESD Country Status Reports

Identification of ESD Leverage Points and Implementation Capacities

The first research approach of this project aimed to identify the various system capacities and leverage points that are essential for effective ESD implementation, with a specific focus on implementation at a national level. The main data collection method was through a country-level survey which was based on an earlier defined evaluation framework. Seven countries, at the lead of the national focal point, participated in this study: Cambodia, China, Japan, Malaysia, the Philippines, Republic of Korea, and Thailand. The country survey was used by the national focal points to submit valuable information regarding the status of ESD implementation in their countries, and where possible the 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. These surveys provided the main data, along with secondary supporting documents, to produce ESD country status reports for the seven countries. A comparative assessment of the ESD implementation status in these countries was then conducted to identify ESD implementation capacities.

When investigating capacities for ESD implementation, it is useful to distinguish different types of capacities for consideration. 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); defined with the following attributes:

1. **Status Indicators**: assess variables that determine the position or standing of ESD in a country. *Baseline* indicator types belong to this category.
2. **Facilitative Indicators**: assess variables that assist, support or encourage engagement with ESD. *Context*, *process* and *learning* indicator types belong to this category.
3. **Effect Indicators**: assess variables relating to initial, medium and long-term achievements during the DESD. *Output*, *outcome*, *impact* and *performance* indicators belong to this category (2007: 30).

The three types of capacities may be further subdivided to generate a greater understanding of the necessary components for ESD implementation. Input capacities 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 factors for framing and structuring good ESD implementation, which 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. Accountability measurements include practice standards and targets, value and behaviour change, ESD knowledge gain and assessment tools for monitoring and evaluation.

Findings: Several key findings and recommendations resulted from this research process. The most significant for this work was the identification of 32 capacities that proved essential for achieving effective ESD implementation across seven different ESD-relevant sectors (see Table 5 for full list).

<u>National Policies, Mandates and Budget for ESD:</u>

- All surveyed countries have clear policies for sustainable development, most importantly a national development plan directed by the principles of sustainable development which also distinguishes education as an important mechanism for the achievement of SD.
- All countries also have sectoral mandates for ESD promotion in the national curriculum and in formal education (both primary and secondary education).
- Some capacity gaps were identified in relation to mandates for ESD 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, and the reporting rate on budget was extremely low. However, the provision of specific budget for ESD or for any single subject area is not appropriate to how educational funding is provided in many countries.

<u>National Curriculum:</u>

- The approach for ESD integration into the curriculum is of obvious importance to the overall implementation of ESD and the learning performance it achieves, but from this research it is inappropriate to imply any type of ranking of different ESD integration approaches.
- Reviewing the approaches for integrating ESD in the seven countries, the standard approach is to incorporate selected SD thematic topics into traditional subjects and a dependency often remains on addressing ESD through an environmental education perspective.
- Most countries 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 systematically developed to create a dynamic approach to ESD that identifies five different means/approaches for contextualising the best practices of ESD into its educational system.
- In regards to institutional structures, an important capacity is having clearly identified authorities, roles and responsibilities at the national level. Effective role sharing improves this capacity and can be strengthened with established structures for inter-departmental or inter-ministerial cooperation on ESD implementation.
- An important throughput capacity is a vision or clear objectives/achievement targets for ESD.
- At the level of output capacities, demonstration that ESD has led to wider reform across the educational system proved significant. This is probably better understood though as an indicator of ESD impact rather than as a capacity for ESD implementation.

Formal Education:

- There are two input capacities that seem highly relevant. First is the application of specific teaching strategies and educational theories to guide ESD. Second is the use of progressive learning objectives that set per grade ESD learning achievements that build upon each other.
- An important throughput capacity is wide coverage of ESD themes and topics. There is no one topic that ranks higher than any other, rather it is the overall scope and diversity of coverage that appears most valuable.
- Availability of ESD teaching materials is another significant throughput capacity but one in which many countries continue to face a deficiency. The use of multi-media formats for disseminating ESD teaching materials provides a supporting secondary capacity.
- The application of innovative learning methodologies is also important and can be further addressed by the types of teaching materials that are provided.
- There are two significant output capacities. 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. The second output capacity is in relation to identifying clear links between ESD teaching and students' behaviour change.

Teacher Training:

- The first input capacity for this sector is a requirement for student teachers to receive training on ESD teaching.
- 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, but one for which most countries face a severe capacity deficiency.
- There are two important throughput capacities that address what is being taught to student teachers. First, the wide coverage of ESD thematic topics, and second the provision of instruction on the innovative learning methodologies linked to ESD.
- 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:

- One main input capacity for this sector was identified, and this is the existence of clearly identified authorities both at national and local level for non-formal ESD implementation.

- For throughput capacities, 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.

Community and Civil Society Participation:

- The main input capacity is supported by the government for ESD networks and partnerships. This is furthered by the number/types of multi-stakeholder networks and partnerships.
- Good coverage of the SD thematic topics by a country's NGOs and CSOs is an important throughput capacity for this sector.
- Government support for using media technologies to promote ESD also proved important.

Private Sector:

- As this sector had the lowest response rate, it was difficult to identify capacities.
- The only input capacity identified is cooperation between government and private sector.
- For throughput capacities, there are two. First, if businesses provide in-service training or continuing professional development on supply chain greening, SCP, environmental management, etc. Second, if businesses support consumer awareness raising initiatives on sustainable consumption option, eco or green products, efficiency issues, etc.

Recommendations from this work specifically address professional capacity, leadership capacity, integration approaches for ESD, and application of ESD to different educational systems. In regards to professional capacity, it was noted that the lack of adequate knowledge and skills for professionals to effectively plan and implement ESD is one of the most fundamental barriers to ESD. This holds true across numerous types of professionals, i.e., policy makers, curriculum developers, and school administrators, but is especially the case for teachers where many have received almost no training for ESD teaching. The need for greater leadership capacity is closely linked to the prior. This can be improved by the formation of a clear vision for ESD with set learning objectives, performance standards and assessment mechanisms; and it can be further supported through defined structures for coordination and role sharing in multi-stakeholder implementation of ESD.

The integration of ESD into educational systems has been inconsistent at best and in many cases it has been unsubstantiated. There is no one blue-print model for strengthening ESD integration as this is dependent on the context and structure of the given education system, but there are a few principles that can support better integration. These include the use of clear teaching strategies, learning methodologies and objectives to structure ESD integration, and proper reflection of progressive pedagogies, educational theories and learning methodologies under the ESD framework.

In regards to the application of ESD to different educational systems, it was found that the flexibility of education systems to integrate ESD depends significantly on the state of development for a given system. Well-developed education systems with a long history of effective practice are often very rigid, thus ESD topics are frequently only interjected at the peripheries of the system. While those education systems with a low-level of development are still struggling to meet necessary quantitative improvements to education and often view the qualitative improvements suggested by ESD as a luxury to be relegated to future activities. Finally, it is those systems with a mid-level of development which have recently met target quantitative improvements and are now moving towards wider qualitative educational improvements and reform, that turn to ESD as a beneficial tool to better address the learning needs and challenges of the next generations.

VII. Findings from Assessment of Learning Performance in ESD

Identification of Key Factors in Effective ESD Practice and Outcomes

The second main assessment approach was qualitative in nature and was based on a series of selected "good-practice" cases from the Regional Centres of Expertise (RCEs) on achieving ESD learning. While the first research approach focused on the quantity and modalities of implementation for ESD, it is equally important to this research to understand the impacts and outcomes of the types of ESD being implemented. The second approach was thus structured to provide an investigation of qualitative achievements for ESD and to consider both the educational contents and learning processes that support effective learning performance.

A case-study reporting framework was established to facilitate comparability among the collected case data, and this was based primarily on open-ended questions. Data from the case studies was coded in regards to the various education/learning processes and contents that were addressed by individual cases, and the data was assessed through theoretical sampling, comparative assessment, and analytical induction. Reflexive testing was also applied to the analysis of learning performance factors to allow for steady interplay between theory and practice, through an action-reflection cycle.

The RCEs provide local or sub-national learning systems and platforms for transformative education by mobilising and facilitating engagement in knowledge and skill production and value promotion. They also act as implementers of content-specific, culturally relevant ESD collaborative initiatives at the grassroots-level which then can be propelled globally through the RCE international network. Providing the primary data for the qualitative aspect of the research, good practice cases on ESD were obtained from 10 RCEs in nine countries located in East Asia and Southeast Asia.

Findings: The study provided a window into the dynamics of implementing representative ESD-based initiatives in some RCEs. Evaluation of the RCEs' background information and the background of the cases included the major partners/supporters, target learners, educational sectors addressed and sustainability themes covered and showed some differences among the ten cases. Although several of the cases addressed all three dimensions of sustainable development, in some cases the economic dimension was not clearly addressed. Generally, all activities related to the educational/learning contents and processes investigated in this study were practiced in no less than seven out of ten cases. Overall, the number of achieved learning outcomes per RCE initiative was quite high, although a couple of RCEs reported only a few learning outcomes. Among these learning outcomes, increased awareness, increased knowledge and improved ESD learning were the highest while a new vision for the future, ESD integration into the curriculum, values, participation and engagement with community of practice were among the lowest achieved. The major strengths and advantages of the RCE cases include: networking, multi-stakeholder participation, engagement and collaborative partnership, self-efficacy, the spirit of voluntarism, and a high sense of motivation. The major weaknesses and constraints include: lack of funding, time, continuity, and capacity/expertise.

Based on the approaches to ESD practice among the selected cases, five good practice models are identified and presented here as mechanisms to strengthen ESD cooperation and implementation.

1) "Teacher Training" model, represented by RCE Beijing, involves capacity development of teachers on ESD concepts, content, and application of progressive teaching methods and is conducted through usage of trainings and practical experience opportunities.

2) "Youth Leadership" model, represented by RCE Tongyeong, involves self-capacity building activities and acquisition of ESD competencies through the use of collaborative learning relationships, leadership/team building activities and networking with international peers.
3) "Higher Education Institute – Community" model, represented by RCE Penang, showcases a university-community partnership for capacity building to solve relevant local problems through knowledge transfer, collaborative learning and problem solving, and implementation of practical solutions. It also strengthens relationships between two interconnected communities and provides a research resource for the university.
4) "Multi-Stakeholder" model, represented by RCE Phnom Pehn, involves multi-stakeholder partnerships with local farmers, students and RCE resource persons and an external advisory body. It is focused on addressing the prevailing environmental, economic and health problems, and concurrently using solutions to improve livelihoods and foster social ties.
5) "Web-based" model, represented by RCE Chubu, highlights the growing importance of information-communication technologies (ICT) for ESD-based learning and cooperation.

Furthermore, the ability to evaluate the different RCE initiatives based on the education/learning processes and contents identified in this work provides an opportunity to compare 'physically different' ESD initiatives across different locations and time-scales.

Because the results of the various RCE cases revealed a diversity of aspects on educational content and learning processes for ESD, evaluating the effectiveness of these cases through monitoring their progress and contribution to sustainable development without a relevant reference framework would prove difficult. A cyclical process of action-reflection between investigation of practice cases and reflection on existing educational theories was applied to acquire critical knowledge through thoughtful questioning and testing of initial propositions in comparison with actual practices. This approach supported development of a framework of the important components for ESD learning performance. To further test for validation, an attempt was made to link the elemental characteristics of the learning performance framework with the actual education/learning-based methods, approaches, activities and practices as well as the outcomes parameters of the RCE cases. This framework resulted in a definition of effective ESD practice based on the division of four elements of ESD learning performance. These four elements highlight the difference between learning processes and educational contents with two elements within each orientation. Learning processes include progressive pedagogies and cooperative learning relationships, while educational contents include sustainability competencies and framework of understanding /world-view.

Table 2: Four Elements of ESD Learning Performance

Educational Contents	Learning Processes
Sustainability Competencies (SC) consists of the capacities people need in order to be able to contribute to sustainable development. This includes a diversity of knowledge and skill-sets along with values and certain ethical issues.	**Progressive Pedagogies (PP)** looks at the educational theories and learning methods used to ground the teaching of ESD. It emphasises the psycho-social dimensions of learning and includes student-centred active learning, critical reflection, problem-solving and cyclical inquiry.
Framework of Understanding & World-View (WV) is the interdisciplinary/trans-disciplinary and integrative system for knowledge generation and codification that looks at the types of contextual frameworks and schemes through which individuals shape meaning from diverse knowledge.	**Cooperative Learning Relationships (LR)** involves the incorporation of multi-stakeholder social learning, participatory knowledge generation, and networking that ESD engages with in participatory processes and work with communities of practice, especially as seen occurring in the RCEs.

The detailed characteristics of the four elements of this framework are as shown in Table 8. This framework consists of several comprehensive, clearly distinct yet overlapping elemental components that highlight the progress of the learning methods, activities and outcomes of RCE cases as most attributes could be clearly linked to this framework. It also provides a better understanding of the ESD practices in the RCEs with regard to future initiatives and what are the important factors in delivering effective ESD learning performance. This framework is therefore assumed to be the first comprehensive learning performance framework that covers both the learning processes and education contents of ESD in such a distinct yet overlapping manner. The application of this framework for implementing future ESD initiatives should facilitate effective performance outcomes and translation of the ESD agenda at the local level. With further application and testing, it could also support translation of ESD into a new global educational framework. The overall goal of bringing together these elements into an actionable framework is to effect social change, which means that the educational/learning processes and content that seek to advance sustainability should exhibit these and other related characteristics. The learning performance framework is also expected to strengthen the M&E process through inclusion of outcome indicators.

Recommendations: To strategically facilitate translation of the ESD agenda at the local level into a larger global educational framework, particularly as we near the end of DESD and consider what lies beyond 2014, it was recommended that: First, implementation of future initiatives should balance the thematic ESD topics in the context of the sustainability dimensions, and in order to also grasp the orientations of projects occurring in the local area, mechanisms should be established to inventory all projects (past, present, and future) in the region to avoid resource and capacity inefficiencies through project duplication or competition. Second, the dimensions of time and especially cultural sustainability need to be better incorporated into programmes. Third, the report on the *Assessment of Learning Performance in ESD* could be used to embed the work of RCEs in official regional and national strategies by serving as basic information to inform policy with respect to educational/learning processes and contents of practices occurring in the RCEs and also to serve as an entry point for ESD-based learning 'infusion' into particularly the formal education sector which is highly regulated in most of the surveyed countries. Fourth, if given the proper tools like the learning performance framework for both planning and assessment purposes, the RCEs can better identify best practices and promote them at the international level through its global network.

VIII. Approaches and Methods for ESD Assessment

The core of an M&E process is defined by the approach and methods utilised for data collection and assessment as this determines the nature of information collected and thus the findings/ recommendations that can be derived from them. There are many approaches and methods that can be used both for monitoring (reporting and data collection) and evaluation (data compilation, evaluation and recommendations) on ESD. Before discussing the individual methods, it is important to recognise a few of the key criteria that need to be met by any selected methods for M&E of ESD. These are *validity*, *reliability (*or *replicability)*, *verification*, and *comparability* (summarised in table 3). Consideration must also be made of the targets for a given M&E of ESD process, especially in relation to the desired scope, breadth and depth of the process as an important precursor to developing an appropriate assessment or M&E system.

Table 3: Main Research Criteria relevant for systematic M&E of ESD

	Quantitative Perspective	Qualitative Perspective
General Perspective	Following the positivist tradition, aims to provide "causal determination, prediction and generalisation of findings".[a]	Following the naturalistic approach, aims to provide "illumination, understanding, and extrapolation to similar situations".[b]
Role in Educational Assessment	Statistical measurements that can demonstrate change (over time) and support comparability while also identifying positive and negative trends.	In-depth knowledge and understanding about the nuances of a given process or system which supports identification of points for effective intervention.
Main Research (or Assessment) Criteria		
Validity	Is the information measured accurate to the intended target, and does it support generalisation of findings? Main concern is on the tools or methods of measurement.	Does the generated knowledge provide rigor, quality, trustworthiness and transferability? Main concern is with cross-checking and methodological triangulation.
Reliability (& replicability)	Does the repeated application of the same tool or method of measurement produce the same finding, i.e. replicability?	Reliability is closely linked to verification, and it concerns the ability of research for "generating understanding".[c]
Verification	Less significant to quantitative research, as the process of replicability serves as the verification mechanism.	Confirming research findings through incremental checking. In M&E, this is strengthened through data collection from multiple sources, peer review of reported data, and overlapping of reporting criteria.
Comparability	Producing numerically comparable data from two or more cases through standardisation of data.	Achieved less by numerical comparability and more by *transferability* of findings with value placed on inductive explanation of processes and motivations.

[a & b:] Quoted from Golafshani (2003: 600).
[c:] Quoted from Stenbacka (2001) as cited in Golafshani (2003: 601).

Summative Assessment Approaches - Standardised Testing and Performance Based Assessment

Performance-based assessment is ideal for evaluating if ESD is achieving the desired learning performance, but it would be difficult to implement for systematic multi-country M&E of ESD. However, in individual classrooms, school systems or even at a national level, the implementation of ESD performance-based assessment would be feasible at least in regards to formal education. ESD ideally includes several unique learning features based around learning skills (i.e. critical problem solving, systems thinking, lifelong learning skills, etc.) and values (i.e. citizenship, stewardship, cooperation, empathy, etc.) that generally speaking have been relatively difficult to measure in summative assessment approaches. Performance-based assessment attempts to move beyond the limitations of only assessing knowledge-based learning as standard in traditional assessment approaches by including practice oriented assessment to demonstrate skill-based learning, however there are still apparent limitations in assessing value-based learning. The approaches to diagnostic assessment in the education field to gain a baseline of existing knowledge, skills, and values in order to better develop lesson plans in line with learners' perceived needs provides the clearest route for assessing value-based learning. The approaches to diagnostic assessment usually include open discussions and interviews with students, but may also utilise observational studies or preferred response surveys and self-reporting inventories.

System Inputs and Capacity Assessment

It is also possible to assess ESD implementation and practice in regards to the inputs being made into the system, and this provides one of the more effective means for multi-country, comparative assessment of ESD. However, on its own the limitation of input assessments is that there is no clear connection made with the actual outputs and outcomes. The application of input assessments though in conjunction with other forms of assessment can be an important approach for effective M&E of ESD. While summative assessments help to identify the positive and negative trends in ESD outcomes thus highlighting the issues that need to be addressed by interventions, an input analysis is more effective at identifying the appropriate points for intervention within the system. Various forms of input assessments include service availability assessments, gap analysis, system mapping, SWOT analysis and several of the tools developed for the Participatory Rapid Appraisal approach.

One form of input assessment that is quite effective is a capacity assessment which is a type of institutional assessment that aims to evaluate the functionality of an institution or organisation by assessing its available resources (including financial, human and knowledge), its organisational structure, its leadership, etc., thus covering the major institutional inputs required for effective implementation. Capacity assessments may also consider the system throughputs that underpin ESD implementation. If we define the input capacities as the institutional arrangements, policy mandates and resource capacities that frame ESD implementation, then we can also define the throughput capacities as those that facilitate effective ESD practice, i.e. the leadership, knowledge, pedagogies and methodologies supporting ESD.

Case Study

As an assessment method, case studies can be a valuable way to generate in depth and highly insightful information about actual means for strengthening ESD outcomes and impact. But due to this methodology's limitations for supporting multi-subject comparison and also several misunderstanding about its benefits, the case study method is often unfairly discredited in regards to its potential application as an assessment tool. Flyvbjerg (2006, 2011) addresses five of the common misunderstandings about case studies. Drawing on his previous work on *phronetic* social science (2001), he explains that, "the case study produces the type of context-dependent knowledge that research on learning shows to be necessary to allow people to develop from rule-based beginners to virtuoso experts" (2006: 221). The case study provides a valuable method for establishing rich narratives of practice in context-dependent settings and the "systematic production of exemplars" (Flyvbjerg, 2001: 87). This last point is especially important for emerging fields such as ESD, for if the desire is to develop a clear understanding of how to systematically enhance ESD learning performance then it is necessary to first select for those extreme examples of best practice and then to intimately investigate the important characteristics and success factors of these cases which may only be elucidated in the minutiae of actual practice.

Benchmarking and Goal Setting

The establishment of clear objectives and goals at the initial outset of a project is a valuable means for facilitating future M&E. Once such goals are established, it is also possible to then conduct an initial diagnostic assessment to establish a baseline of where countries or organisations are at prior to starting the initiative. Thus, it is possible to not only evaluate how close countries or organisations are to achieving the goals but also to measure the progress that is made towards these goals over

time. Generally though, the types of goals appropriate for this type of benchmarking and M&E need to have clear quantitative targets that are relatively easy to measure and assess.

Such goal setting however was purposefully avoided during the establishment of the DESD agenda and programme. The original goal for DESD as stated in UN General Assembly resolutions 59/237 was for, "Governments to consider the inclusion … of measures to implement the Decade in their respective education systems and strategies and, where appropriate, national development plans". And in the International Implementation Scheme for DESD, UNESCO also defines two sub-goals:

- Provide an opportunity for refining and promoting the vision of and transition to sustainable development – through all forms of education, public awareness and training.
- Give an enhanced profile to the important role of education and learning in sustainable development (UNESCO, 2005: 6).

Even these sub-goals though only provide very broad, conceptual approaches. This document does provide four additional objectives for DESD that helps to move closer towards actual implementation targets, but even these remain rather open-ended and are directed more to how UNESCO as the lead implementer of the decade should provide support to countries on ESD; i.e. 1) facilitate ESD networks and stakeholder interaction, 2) improve quality of ESD teaching/learning, 3) support attainment of MDGs through ESD efforts, and 4) provide opportunities for educational reform through ESD (UNESCO, 2005: 6).

IX. Framework for Monitoring & Evaluation of ESD and a Multi-Tiered Approach

Several points must be properly considered in the development of a monitoring and evaluation system of ESD, including:

1) Scope of the research/assessment,
2) Desired coverage, breadth and depth of the research,
3) Focus of investigation (i.e., systems approach, actor approach, or beneficiary approach),
4) Target users of information/findings from M&E process,
5) Desired types of knowledge to be generated,
6) Process of data collection/assessment and time scale of reporting,
7) Validity, Reliability (or replicability), Verification, Comparability, and Transferability.

Due consideration of these points would result in differing suggestions for what is the appropriate framework and approach for M&E of ESD. However, in this work the approach aims to provide regionally-relevant M&E of ESD across the Asia-Pacific region and in a manner that lends itself to national status reporting and cross-country comparative evaluation. Thus, the final suggestions in this work on a possible framework for monitoring and evaluation of ESD in the Asia-Pacific region are based on meeting criteria relevant to the stated context, while other potential M&E frameworks would need to be adapted to meet their different context and criteria.

Based on the development of the evaluation framework throughout the research process, it was decided that seven distinct sectors (or areas) of ESD implementation and practice should be included in the initial scoping research on M&E of ESD. These are: 1) national policy, mandates and budget, 2) national curriculum, 3) formal education, 4) teacher training, 5) non-formal education, 6) community and civil society participation, and 7) private sector. However, sector one is understood as providing background context on the prioritisation for ESD in a given country; sectors two, three, and four are the primary sectors of focus; while sectors five, six, and seven are secondary sectors of focus. Input

and throughput capacities (see Table 4) should be addressed for all sectors, but output capacities are only to be addressed for the three primary sectors of focus. This provides a broad scope of coverage on ESD while also allowing for some additional depth in regards to the aspects most relevant for ESD learning performance in formal education.

This general structure for the M&E of ESD framework was presented at the final consultation for this research phase where it was further refined and adapted. One aspect of this refinement was a clear division of target audiences for the information generated from the M&E process into three categories: first – influential actors and institution setters, second – implementers and practitioners, and third – learners and beneficiaries. These target audiences were then added to the M&E framework to establish the first level of sectorial divisions for focus, and sub-divisions were reorganised to identify the relevant areas of ESD implementation for investigation, including the international framework, national policy and curriculum, formal education, teacher training, non-formal education, and multi-stakeholder collaboration. Table 5 presents the updated version of the M&E of ESD framework based on agreements from the consultation.

Table 4: Components of ESD Capacity Framework

Input Capacities *(Status Indicators)*	**Throughput Capacities** *(Facilitative Indicators)*	**Output Capacities** *(Effect Indicators)*

• Institutional Arrangements
• Policy Mandates
• Resource Capacities
  ▪ Financial
  ▪ Human
Addressing the structural components to ensure ESD implementation
	• Leadership (and vision)
	• Knowledge
	• Expertise
	• Educational Pedagogies & Methodologies
	Addressing the framing and contents of good ESD practice
		• Accountability measurements
		  ▪ Practice standards & Targets
		• Value and behaviour change
		• ESD Knowledge gain
		• Assessment tools for monitoring and evaluation
		Addressing quality of learning performance, impacts ESD is having on learners, and necessary accountability mechanisms

In furthering the development of effective M&E of ESD, a multi-tiered indicator and reporting process is proposed. Three tiers are proposed with each tier having the respective targets: 1) addressing the capacities for effective ESD implementation in a quantitative manner, 2) linking the implementation capacities and the learning performance characteristics to address delivery of qualitative learning benefits of ESD, and 3) provision of performance based testing of learning outcomes. The purpose of a multi-tiered approach is to provide the most complete, holistic version for M&E of ESD, while also recognising the likely limitations for achieving the systematic application of all aspects (related to the three tiers) of the M&E process in a timely manner across all countries in the region. Thus tier one is the easiest aspect to apply, while tier three would be the most difficult.

Tier one of the M&E process would aim to consider how well the system is established to deliver ESD implementation. For this tier, the criteria for M&E would be based on the implementation capacities identified in Table 6. Although these capacities set clear criteria for assessing the functionality of ESD systems, it is still necessary to identify specific indicators that appropriately respond to these capacities and which can be reported in a quantitative manner. Tier two would respond to how well the important learning performance characteristics have been integrated into the overall delivery of ESD. At this tier, the questions raised in Table 7 would form the basis for identifying relevant indicators. Following the final consultation process, there is greater desire to integrate both tier one

and tier two into the M&E of ESD work that will be continued in the Asia-Pacific region. However, for tier three which requires the use of performance based testing at a school level, it is recognised that this is currently not feasible to achieve across the region and is rather suggested as a possibility that individual countries could implement if they so desired. For this tier's performance based testing, the assessment would aim to address achievement based on the learning performance elements and characteristics identified in Table 8. The full application of all three tiers of the approach would provide the largest scope across the ESD process from implementation to practice to impact and achievement. As such, it would also allow for the most detailed evaluation including the potential to determine correlations between inputs and outputs or interventions and impacts.

The attempt to link system capacities and learning performance characteristics to develop indicators that can address both practice and performance may not be appropriate though for the initial step of indicator development as it would require the inclusion of qualitative criteria that are hard to address for newly established ESD systems. It may be better to utilise a multi-tiered approach to M&E for ESD. The first tier of indicators could be framed solely around the capacities for effective ESD implementation (from Table 7) in a quantitative manner to answer the general question of "has a system been set in place to adequately deliver ESD implementation". Then at the second tier of indicators, it would be possible to address the question of "has the process of ESD implementation and practice been sufficiently framed to deliver the qualitative learning benefits of ESD?" based on a set of indicators that links capacities and learning performance characteristics as suggested. However, it is worth considering if such a tiered approach to M&E should be progressive in nature, and that M&E would begin with the first tier of indicators and only move onto the second tier after proving high performance/achievement in regards to the first tier. It would then also be possible to advocate a third tier of indicators to provide performance based testing of learning outcomes because if an individual country has already committed to and proved high achievement in regards to tiers one and two then the next logical step for strengthening M&E is to address the impact delivered to the beneficiaries of the ESD system.

It should be kept in mind that one of key purposes of M&E of ESD is to engender a process of both individual and institutional learning by creating an action-reflection cycle that supports the continual review and improvement of ESD implementation and practice. Monitoring and evaluation is not an end in itself, rather it is used to stimulate action. The proposed framework provides a useful starting point for actualising the M&E of ESD, but further development is still required.

Guided by both the M&E framework and additional criteria for selecting good indicators, the next step of this project will be to clearly identify and elaborate relevant indicators for use with the framework. Following that, a systematic process for reporting and data collection will need to be established. In future efforts, the selected indicators will ideally be piloted across the region which would allow for further testing and refinement. Finally, the hope of this project is to establish a systematic process for countries to report on their status of ESD implementation and practice during the UN Decade on ESD in time to provide valuable inputs to the discussions that will occur at the end of the decade on the future of ESD beyond 2014. With this in mind, ESD indicators will be developed with three specific objectives in mind: 1) to monitor progress in ESD implementation and practice, 2) to learn and improve, and 3) to influence future policy and practice.

Table 5: Structure of Monitoring and Evaluation of ESD Framework

Target Actors & Audience	Sectors	Status Indicators *(Input Capacities)*	Facilitative Indicators *(Throughput Capacities)*	Effect Indicators *(Output Capacities)*
IMPLEMENTATION STRUCTURE *Target: Institution Setters & Actors of Influence*	**International Framework & Support**			
	National Framework & Curriculum			
PROCESS AND PRACTICE OF ESD IMPLEMENTATION *Target: Implementers and Practitioners*	**Formal Education**			
	Teacher Training			
	Non-Formal Education			
	Networks & Multi-Stakeholder Collaboration *Including civil society, private sector, community, media, etc.*			
LEARNING ACHIEVEMENT *Target: Learners and Beneficiaries*	**1. Individuals (learners)** **2. Communities** **3. Country/Society**			

Table 6: Identified Capacities for Effective ESD Implementation

Sectors	Input Capacities	Throughput Capacities	Output Capacities
National Policy, Mandates and Budget	- National SD Plan o Inclusion of education or ESD in SD Plan - Sectorial Mandates for ESD	- Budget, *but considered less significant* o *Maybe project based funding for certain sectors*	
National Curriculum	- Strategic approach for ESD integration o *Potentially addressing how it achieves pedagogical reform & second-order learning* - Authorities with clearly identified roles/ responsibilities for ESD o Also considering level of role sharing across various departments/ offices	- Structure for inter-departmental/ inter-ministerial coordination of ESD implementation - ESD curriculum development support by country's research community & good mechanisms to incorporate expert knowledge and research into curriculum - Vision for ESD identifying clear learning objectives / achievement targets	- ESD implementation leading to wider educational reform *(more as effect indicator than as a capacity for implementation)*
Formal Education	- Specific teaching strategies or educational theories guiding course content & use of progressive, per grade learning objectives o 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	- Wide coverage of important ESD themes and topics - Availability of ESD teaching materials o Supported by use of multi-media formats (electronic versions allow free distribution) - Application of innovative learning methodologies	- 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 o Both provide benefit if they lead to re-setting of targets to improve outcomes
Teacher Training	- Requirement for students teachers to receive ESD training - Amount of TEIs providing ESD training - Amount of In-Service teachers with ESD training	- Wide coverage of ESD thematic topics by the TEIs - TEIs teaching innovative learning methodologies	- Mechanisms for teachers to share good practices in ESD teaching
Non-Formal Education	- Authorities for non-formal ESD both at national and local levels	- 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	- Government support for ESD networks, partnership and relevant CSOs - Number and type of multi-stakeholder networks/ partnerships active in ESD	- Coverage of ESD thematic topics by NGOs - Government support for using media technologies to promote ESD o *Cooperation in international ESD activities (requires more research on existence across region)*	
Private Sector	- Organised cooperation between government and private sector on ESD	- 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	

Table 7: Linking Learning Performance Characteristics to the Capacities for Effective ESD Implementation

	Input Capacities *(status indicators)*	Throughput Capacities *(facilitative indicators)*	Output Capacities *(effect indicators)*

Key Aspects of Capacity	***Addressing the structural components to ensure ESD implementation***
	• Institutional Arrangements
	• Policy Mandates
	• Resource Capacities
	  ▪ Financial
	  ▪ Human
		Addressing the framing and contents of good ESD practice
		• Leadership (and vision)
		• Knowledge
		• Expertise
		• Educational Pedagogies & Methodologies
			Addressing quality of learning performance, impacts ESD is having on learners, and necessary accountability mechanisms
			• Accountability measurements
			  ▪ Practice standards
			  ▪ Targets
			• Value and behaviour change
			• ESD Knowledge gain
			• Assessment tools for monitoring and evaluation

Identified Links to Learning Performance Characteristics	**Institutional Arrangements** Does the ESD system and its implementation structure address ESD in a holistic, integrated, interdisciplinary manner, etc.? *(in line with the approach towards an SD worldview)* Is there a clear definition of roles and responsibilities in ESD implementation and good mechanisms for multi-stakeholder coordination and participation in its implementation? *(establishing cooperative learning relationships in ESD institutions)* **Policy Mandates** Are there strong links between ESD and the country's vision/plan for sustainable development? *(promoting a future vision of an SD worldview)* Does the curriculum structure and ESD strategies enshrine the characteristics of progressive pedagogies *(i.e. student centred, active-experiential learning, collective inquiry, etc.)* Does the curriculum structure and ESD strategies promote skill-based and value-based learning? Does the curriculum structure and ESD strategies promote cooperative and social learning approaches? **Resource Capacity *(human resources)*** Do ESD officers/implementers/teachers hold the necessary expertise for effective Learning Performance teaching in relation to pedagogical and methodological knowledge? Do ESD officers/implementers/teachers hold the necessary expertise for effective Learning Performance teaching in relation to the knowledge and skills sets of sustainability competencies?	**Leadership (and vision)** Does the vision and objectives for ESD promote the idea of improved development, better society, increased well-being, etc.? *(in line with the approach towards an SD worldview)* Does the conceptualisation and framing of ESD include the development of skills and values? **Knowledge** Is ESD framed/practiced in a manner that supports integrative and pluralistic knowledge generation and codification? Is ESD framed around the various sustainability competencies, and does it include knowledge-based, skill-based, and value-based learning approaches? **Expertise** Is teaching informed by and framed around progressive pedagogies? Is teaching informed by and framed around cooperative learning and social learning theory/approaches? **Educational Pedagogies and Methodologies** Is teaching conducted in student centred, active-experiential learning, collective inquiry approaches? Is teaching conducted in a manner aimed at building cooperative learning relationships?	**Accountability Measurements** Is there accountability to oneself, to the group, and to society *(as framed in cooperative learning relationships)?* - Especially framed through group process, role sharing, and interdependence Are there set learning targets that account for the various sustainability competencies – *including knowledge, skills and values*? **Value and Behaviour Change** Are learners approaching the world as meaningful and empowered change agents? Are learners gaining a strong sustainability value set? *(i.e. respect, care, empathy, citizenship, stewardship, self-reliance, etc.)* Are learners demonstrating a higher appreciation towards cooperation, participation and power sharing? **ESD Knowledge gain** Does ESD knowledge and skill gain correspond with the sustainability competencies? Are learners developing the skills for active life-long learning? Are learners developing the skills systematic problem solving? Are learners gaining a holistic, integrated, interdisciplinary understanding of the world? **Assessment tools for monitoring and evaluation** Does the assessment process create a reflexive learning cycle with future improvements being generated from current observations? Does the assessment process allow for collective discourse and reflexivity? Does an effective system for knowledge management, distribution and sharing exist?

Key:

Educational Contents	
Sustainability Competencies	Framework of Understanding & World-View

Learning Processes	
Progressive Pedagogies	Cooperative Learning Relationships

Table 8: Specific Elemental Characteristics of ESD Learning Performance Framework

<table>
<tr><th colspan="3">Educational Contents</th></tr>
<tr><th colspan="2">SUSTAINABILITY COMPETENCIES (SC)</th><th>WORLD-VIEW (WV)</th></tr>
<tr><td>Knowledge</td><td>• Climate change
• Disaster risk reduction
• Sustainable consumption and production/Education for sustainable consumption
• Indigenous knowledge
• Information and communication technologies (ICT) and education/ESD
• Well-being, development & environmental quality
• Resilience and socio-ecological Systems</td><td rowspan="3">CHARACTERISTICS
• Holism and Integration
• Systems perspective or whole systems thinking
• Interdisciplinarity and Cross-boundary approaches
• Cultural relativism and Social constructivism
• Pattern recognition, Systems design from patterns to details (synergy)

SUPPORTING (EDUCATIONAL/LEARNING) THEORIES and METHODS:
Systems theory, Critical theory, Transformative learning</td></tr>
<tr><td>Skills</td><td>• Critical thinking and complex thinking
• Conflict resolution
• Seeking alternative solutions
• Adapting to change and advocating for change
• Social action, collaboration and cooperation
• Systems thinking and thinking focused on values
• Conflict resolution, negotiation, creativity and imagination
• Interdisciplinary and trans-disciplinary research skills
• Adaptive learning
• Contextualization of issues
• Personal introspection, visioning and buy-in to identify change and adapting to it</td></tr>
<tr><td>Values</td><td>• Respect, care and empathy
• Charity, social and economic justice
• Citizenship and stewardship
• Empowerment and motivation
• Commitment, cooperation, and compassion
• Self-determination and self-reliance

SUPPORTING THEORIES: Constructivism</td></tr>
<tr><th colspan="3">Learning Processes</th></tr>
<tr><th colspan="2">PROGRESSIVE PEDAGOGIES (PP)</th><th>COOPERATIVE LEARNING RELATIONSHIPS (LR)</th></tr>
<tr><td colspan="2">CHARACTERISTICS
• Critical reflection & practice and problem solving
• Action/experience–oriented, student-centred learning
• Knowledge production through iterative interaction
• Life-long learning, and
• Cyclical process of collective inquiry

SUPPORTING (EDUCATIONAL/LEARNING) THEORIES and METHODS:
Experiential learning theory, Critical praxis, Critical pedagogy, Problem-based learning</td><td>CHARACTERISTICS
• Inclusion and internal network structure for interaction (among social networks) and latitude given for democratic debate on the framing and definition of the issues at stake
• Group processing in establishing and managing systems of knowledge and making sense of information
• Participation and power sharing, shared ownership/commonality
• Clear definition and purpose of roles
• Accountability of individual/groups
• Positive interdependence and building of trust
• Opportunities for reflexive moments and discourse
• Situatedness and Social skills

SUPPORTING (EDUCATIONAL/LEARNING) THEORIES and METHODS:
Social learning (theory and process), Communities of practice, Cooperative learning (theory and model), Cooperative inquiry</td></tr>
</table>

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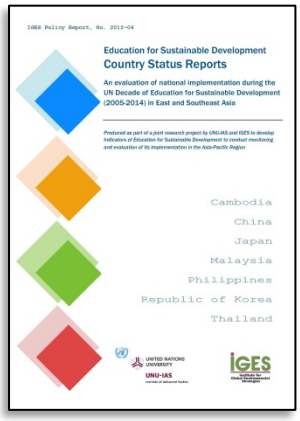
ISBN: 978-4-88788-138-9

This summary is based on the findings of the following three policy reports:



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

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Assessment of Learning Performance in ESD:
Investigating the Key Factors in Effective Educational Practice and Outcomes for Sustainable Development –
A study of good practice cases collected from the Regional Centres of Expertise on ESD in East and Southeast Asia

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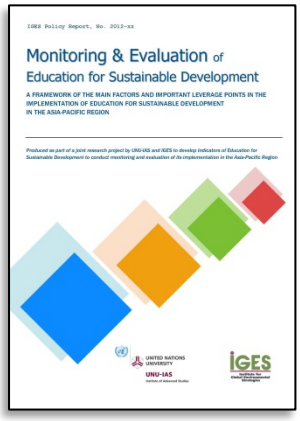

Monitoring & Evaluation of Education for Sustainable Development:
A Framework of the Main Factors and Important Leverage Points in the Implementation of ESD in the Asia-Pacific Region

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