UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

TEN YEARS OF THE UNECE STRATEGY FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT

Evaluation report on the implementation of the UNECE Strategy for Education for Sustainable Development from 2005 to 2015

UNITED NATIONS

New York and Geneva, 2016

NOTE

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ECE/CEP/179

Acknowledgements

Foreword

Today's world is facing some of the most serious challenges in human history. With the rapid depletion of Earth's resources, the ongoing degradation of land, water and air, and the loss of species and ecosystem biodiversity, it will become increasingly difficult to support a prosperous, secure and equitable life for people on the planet. This alarming situation is being intensified by a changing climate, with scale and impact hard to predict in the medium and long term. Our vulnerability in the face of these worsening environmental conditions is compounded by the increasing disparity between rich and poor, the growth in global population and urbanization, and the loss of personal security in many countries. Now more than ever, education has a critical role to play, not only in providing learners with knowledge and skills to address these challenges, but also in promoting the values that will instill respect and responsibility towards others and the planet itself.

The 56 member States of the United Nations Economic Commission for Europe (UNECE or ECE) have acknowledged the need to support and encourage education for sustainable development (ESD) by committing to a 10-year Strategy to reorient education systems towards sustainable development. Member States and education stakeholders throughout the region should be commended for their efforts. They have worked hard to advance ESD in policy and in practice, through all levels of formal education, and in non-formal and informal education processes. This evaluation report reveals that many ECE member States now have policies and frameworks in place to support implementation of the Strategy for ESD, and numerous initiatives have been launched to integrate ESD into the content and processes of formal, non-formal and informal education, moving from policy to practice. However, the challenge of integrating ESD system-wide across all aspects and levels of formal, non-formal and informal learning still remains.

ESD continues to grow in importance on the world stage. Major international agreements have confirmed the role of education in sustainable development: the 2015 Paris Agreement of the Framework Convention on Climate Change clearly affirms the importance of education, training and public awareness at all levels on the matters addressed in the Agreement; vital education targets have been set within the new global Sustainable Development Goals; and in December 2015 the United Nations General Assembly adopted the United Nations Educational, Scientific and Cultural Organization (UNESCO) resolution Global Action Programme on ESD, recognizing ESD as "a vital means of implementation for sustainable development" and affirming UNESCO's role as the lead agency for the implementation of the Global Action Programme on ESD.

A draft future implementation framework has been developed by the UNECE Steering Committee for ESD to continue the UNECE Strategy for ESD beyond 2015. As ECE member States prepare to commit to ESD beyond 2015, the gains made from 2005 to 2015, together with these new international commitments to ESD, provide the basis for ECE member States to continue their work, encouraged by the knowledge that change can indeed happen when all stakeholders work together with a commitment to a better world.

Contents

List of Acronyms

ASPNet	UNESCO Associated Schools Project Network
BENELUX	Union of Belgium, Netherlands, Luxembourg
CSR	Corporate Social Responsibility
ECE	(United Nations) Economic Commission for Europe
ENSI	Environment and School Initiatives
ESD	Education for Sustainable Development
EU	European Union
GAP	Global Action Programme for ESD
GLOBE	Global Learning and Observations to Benefit the Environment
HEIs	Higher Education Institutions
ISCED	International Standard Classification of Education (ISCED) levels:
	0. Early childhood education
	1. Primary education
	2. Lower secondary education
	3. Upper secondary education
	4. Post-secondary non-tertiary education
	5. Short-cycle tertiary education
	6. Bachelor's or equivalent level
	7. Master's or equivalent level
	8. Doctoral or equivalent level
MDGs	Millennium Development Goals
MSESD	Mediterranean Strategy on ESD
NGO	Non-governmental Organization
NIR	National Implementation Report
OECD	Organization for Economic Cooperation and Development
R&D	Research and development
RCE	Regional Centre of Expertise in ESD
REC	Regional Environment Centre for Central and Eastern Europe
REEL	Regional Environmental Education Lead
SDGs	Sustainable Development Goals
SEED	School Development through Environmental Education
SEPN	Sustainability Education Policy Network
STEM	Science, Technology and Math
TVET	Technical and Vocational Education and Training
UfM	Union for the Mediterranean
UN	United Nations
UN DESD	United Nations Decade for Education for Sustainable Development
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNU-IAS	United Nations University Institute for Advanced Science
VECON	Vereniging van leraren in de economisch-maatschappelijke vakken (Association of Teachers in the economic and social fields)
WWF	World Wildlife Fund

The United Nations Economic Commission for Europe (UNECE or ECE)[1] has recognized the importance of education as critical to influencing the knowledge, skills and values of citizens to support a more sustainable world. In 2005, the Vilnius High-level Meeting of Environment and Education Ministers adopted the 10-year UNECE Strategy for Education for Sustainable Development (2005–2015). Guided by the UNECE Strategy for Education for Sustainable Development (2005–2015), member States have moved forward with a wide range of initiatives that have contributed to the United Nations Decade of Education for Sustainable Development (UN DESD). The ECE Steering Committee on ESD has served as an important example of regional cooperation and coordination of ESD, fostering the sharing of information, reporting and lessons learned. The Strategy for ESD, together with the regular monitoring and assessment of progress, has provided a blueprint for other regions in the world to advance ESD. The ECE's innovative work on developing competences for educators in ESD has garnered international attention, as have numerous good practices generated by a wide range of stakeholders in the region. Important advances have been made in integrating ESD in education policy and curricula, as well as in aligning education objectives with national sustainable development visions and goals.

This evaluation report, *Ten Years of the UNECE Strategy for Education for Sustainable Development,* summarizes the progress, challenges and achievements of ECE member States from 2005 to 2015 in achieving the Strategy for ESD. Many ECE member States now have ESD policies and frameworks in place to support ESD implementation. Hundreds of initiatives have been launched to integrate ESD into the content and processes of formal, non-formal and informal education, moving from policy to practice. Highlights of these accomplishments include the following:

- ESD is now reflected in national education policy documents by over 90 per cent of reporting member States.
- 89 per cent of reporting member States consider that ESD is now part of their country's sustainable development policies and planning.
- 84 per cent of reporting member States consider that ESD has been included in national curriculum frameworks, with most efforts targeting the primary, lower and upper secondary levels.
- Close to 90 per cent of member States report that ESD methods and instruments are in place for non-formal and informal learning, with another 70 per cent indicating that support for workplace learning on sustainability is also strong.
- Nearly three quarters (71 per cent) are promoting whole-institution approaches.
- Close to 90 per cent report efforts to address ESD in educators' initial and in-service training.
- Member States have moved beyond discussions of what constitutes a "green economy" to concerted efforts to retool technical and vocational education and training (TVET) to support sustainability.

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[1] The United Nations Economic Commission for Europe brings together 56 countries located in the European Union, non-EU Western and Eastern Europe, South-East Europe, the Commonwealth of Independent States and North America.

However, the challenge of integrating ESD system-wide across all aspects and levels of formal, non-formal and in-formal learning still remains. In looking to the next phase of work, member States should be encouraged to further develop and strengthen strategies, plans and mechanisms for ESD implementation. They should also continue to promote the integration of ESD into education and sustainable development policy, pursue work on the three leverage points (school plans, teacher preparation and TVET in support of greening economies), increase the availability of and open access to good quality online ESD resources, give more attention to ESD in non-formal and informal learning contexts, and address the need for ongoing ESD research, monitoring and evaluation. The findings of this report have been taken into consideration in drafting the future implementation framework for the Strategy (ECE/CEP/AC.13/2016/4) and will be discussed at the high-level segment on ESD at the Environment for Europe Ministerial Conference in Batumi, Georgia, in June 2016.

Globally, member States have come together to commit to a new set of Sustainable Development Goals, which include acknowledgement of the critical role of education. The future of the Strategy for ESD becomes even more critical as ECE member States consider how they will advance ESD in support of global goals. The considerable experience and success of member States from 2005 to 2015 is an important foundation upon which to build ECE's ESD Future Implementation Framework and contribute to the UNESCO Global Action Programme on ESD.

> *It is a common understanding of the decision-makers at all levels that ESD is vital for ensuring a future for the generations ahead* (Bulgaria, NIR).

1. BACKGROUND

ECE has recognized the importance of education as a critical factor in influencing change towards sustainable development. Citizens need to acquire the knowledge, skills and values necessary to support the transition to a more sustainable world. In order to promote ESD across the ECE Region, in 2005 the Vilnius High-level Meeting of Environment and Education Ministers adopted the 10-year UNECE Strategy for Education for Sustainable Development (hereinafter called the Strategy for ESD or Strategy) to span three implementation phases (2005–2015). The Strategy for ESD was seen as a contribution to the United Nations Decade of Education for Sustainable Development (2005–2014) and was meant to be the foundation for the regional implementation of the Decade and outcomes of the World Summit on Sustainable Development.

> **What ESD means to the ECE**
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> ESD means including key sustainable development issues into teaching and learning…. It also requires participatory teaching and learning methods that motivate and empower learners to change their behaviour and take action for sustainable development. ESD consequently promotes competences like critical thinking, imagining future scenarios and making decisions in a collaborative way (UNECE, 2005).

The Strategy for ESD complements many other global UN initiatives, including the Dakar commitments in 2000 to Education for All, the education targets in the Millennium Development Goals (MDGs), The UN Secretary General's Global Education First Initiative, the Tbilis+35 Intergovernmental Conference on Environmental Education, and the global Sustainable Development Goals adopted at the UN Sustainable Development Summit on 25–27 September 2015.

The overall objective of the Strategy has been "to equip people with knowledge of and skills in sustainable development, making them more competent and confident while at the same time increasing their opportunities for leading healthy and productive lifestyles in harmony with nature and with concern for social values, gender equity and cultural diversity" (CEP/AC.13/2005/3/Rev.1, para. 6). The Strategy emerged from negotiations at the Environment for Europe Fifth Ministerial Conference in Kiev 2003 (UNECE, 2005), in acknowledgment that changing knowledge, perspectives and behaviours would require sustained exposure over time to formal, non-formal and informal ESD. Six objectives were set for member States to consider:

1. Ensure that policy, regulatory and operational frameworks support ESD;
2. Promote sustainable development through formal, non-formal and informal learning;
3. Equip educators with the competence to include sustainable development in their teaching;
4. Ensure that adequate tools and materials for ESD are accessible;
5. Promote research on and development of ESD;
6. Strengthen cooperation on ESD at all levels within the ECE region.

A 10-year time frame was set with three phases for implementation and reporting:

(a) Phase I (2005–2007) Stocktaking: Member States were invited to identify existing initiatives, implement initial measures and consider priorities for next steps. Outcomes were reviewed in the 2007 evaluation report (ECE/BELGRADE.CONF/2007/INF/3–ECE/CEP/AC.13/2007/2);

(b)   Phase II (2008–2010) Integration: Member States were encouraged to begin integration of sustainable development into learning, to implement national strategies and to review progress. Findings of the second reporting cycle, presented in a second evaluation report (ECE/CEP/AC.13/2012/3), were released in 2011;

(c)   Phase III (2011–2015) Implementation: Member States advanced their progress towards full implementation, following a work plan with three priority action areas:

- to ensure that there is an ESD school plan in every school by 2015;
- to promote the introduction of ESD into teacher education;
- to reorient technical and vocational education and training (TVET) in support of sustainable development and the transition to a green economy (UNECE Steering Committee on ESD, 2013).

In addition to member States, a wide range of stakeholders contributed to the achievement of the objectives of the Strategy for ESD, including non-governmental organizations, academic institutions, networks such as United Nations Educational, Scientific and Cultural Organization (UNESCO) Associated Schools Project Network (ASPnet), multi-stakeholder groups such as the Regional Centres for Expertise in ESD, and other UN agencies, such as the United Nations University.

Oversight of the implementation of the Strategy has been undertaken by the ECE intergovernmental Steering Committee on ESD. In addition to establishing the committee, ECE member States agreed in 2005 that the Strategy should be accompanied by an indicator system to support reporting by member States. Development of the indicators was undertaken by a 10-member Expert Group on Indicators for ESD. The resulting guidance document, *Learning from each other: the UNECE Strategy for Education for Sustainable Development* (UNECE, 2009*b*), has provided the context, rationale and interpretation notes to assist governments and other stakeholders through the reporting process.

The following report summarizes the progress and notable achievements of ECE member States from 2005 to 2015, with particular attention to Phase III of the Strategy (2011–2015), and identifies challenges and opportunities for building on that progress into the future. The findings of this report were taken into consideration when drafting the future implementation framework for the Strategy for ESD and will be discussed at the high-level joint session of education and environment ministries at the June 2016 Environment for Europe Ministerial Conference in Batumi.

1.1 Methodology

This evaluation report reviews the data collected through national implementation reports (NIRs) submitted by member States at the end of the third phase of the Strategy, as well as supplemental information provided by member States to the secretariat through annual informal national reports and reports of ECE ESD Steering Committee working groups (UNECE, 2015*b*). It also reflects on progress as compared to the first and second evaluation reports for 2007 and 2010. Consideration is also given to reporting to UNESCO by UNESCO member States in the ECE region as part of the 2014 final monitoring and evaluation report for the Decade of ESD (UNESCO Final Report) (UNESCO, 2014).

Monitoring, evaluation and reporting criteria

The framework for assessment used in this evaluation report is the same framework used for the 2007 and 2010 reports and follows the "Criteria to assess successful implementation of the UNECE Strategy for Education for Sustainable Development" (Eernstman and Wals, 2011) set by the ECE Expert Group on Indicators, as well as the Guidance on Reporting on the Implementation of the UNECE Strategy for Education for Sustainable Development (ECE/CEP/AC.13/2009/5). The reporting format (ECE/CEP/AC.13/2014/5) was updated by the secretariat in consultation with the Expert Group on Indicators to meet the reporting needs of Phase III. The following table summarizes the major assessment criteria for each of the seven issues to be addressed through the Strategy for ESD.

Monitoring and Evaluation Framework (UNECE, 2009b, p. 83)	
Issues	**Criteria for success**
1. Policy, regulatory and operational frameworks support the promotion of ESD	• Basic prerequisites achieved (strategy in national language, national focal point, coordinating body, national implementation plan, synergies with other ESD processes) • ESD explicitly mentioned in national legislation and/or policy documents • National ESD action plan developed and implemented through interdepartmental and multi-stakeholder process
2. Sustainable development in formal, non-formal and informal learning	1. Themes related to social, environmental and economic dimensions are addressed in the curricula at a minimum of four International Standard Classification of Education (ISCED) levels [2] 2. Themes are addressed in an integrated manner 3. The four learning competences (Learning to Know, Do, Be, and Live and Work together) are addressed, covering at least three expected outcomes 4. At least one national programme supporting a whole-institution approach exists 5. ESD is addressed in a statutory quality assessment system in at least one ISCED level 6. At least one example is given of sustainable development (SD) issues being addressed in both non-formal and informal education, with the example(s) demonstrating how evaluation results have been used to improve practice 7. Most of the stakeholder groups are involved
3. Competence within the education sector	• ESD is incorporated into initial and in-service training within at least four ISCED levels • ESD is incorporated into training of leadership and administrative staff within at least four ISCED levels • At least one national programme/initiative exists to support cooperation/networks/platforms on ESD among educators
4. Tools and materials	• ESD tools and materials are available to at least three ISCED levels • A working system is in use to assure quality of ESD tools and materials • At least one of the following exists: a national strategy for distribution; public authority money invested; approved materials available through the Internet; register of teaching tools in the national language available through the Internet; register of teaching tools available through other channels
5. Research and development	• Research on ESD is carried out and supported • ESD actors are supported in contributing to ESD research and development • Initiatives / mechanism are described that link ESD R&D with practice • ESD research involves interactive dissemination mechanisms
6. Education for sustainable development cooperation	• At least one example is given of international cooperation on ESD
7. Conservation, use and promotion of knowledge of indigenous peoples	• Evidence shows that the role of indigenous peoples' knowledge is recognized in ESD

Primary data source: national implementation reports

The national implementation report (NIR), prepared on the basis of a reporting template, was developed by the ECE Expert Group on Indicators and describes the progress in the implementation of the Strategy for ESD at a national level on the basis of the responses to a set of indicators. The reporting template included 18 indicators with 497 sub-indicators structured according to the seven issues that reflect the objectives of the Strategy for ESD. The Expert Group instituted a ratings scale for a number of sub-indicators to provide greater specificity in how member States were advancing. The elements of the scale "A" to "F" varied from indicator to indicator. For the purposes of this report,

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[2] ISCED levels: 0. Early childhood education; 1. Primary education; 2. Lower secondary education; 3. Upper secondary education; 4. Post-secondary non-tertiary education; 5. Short-cycle tertiary education; 6. Bachelor's or equivalent level; 7. Master's or equivalent level; 8. Doctoral or equivalent level.

the categories have been interpreted as follows: A: Minimum; B: Initial; C: Moderate; D: Progressing; E: Advanced; F: Maximum. Both quantitative analysis and qualitative review of descriptive comments in the NIRs have been considered in this evaluation report.

Out of the 56 ECE member States, 38 submitted an NIR to the ECE secretariat for the third reporting period. This is a slight increase over the previous reporting periods, with 35 member States submitting reports in 2007 and 36 in 2010. The majority of responses received were from Ministries of Education (68 per cent) with the remainder submitted by ministries responsible for environment, ecology, agriculture and economics portfolios (25 per cent). Thirty-two member States contributed at least one informal report on progress on Phase III priorities for 2012, 2013 and 2014, with 23 member States submitting detailed updates in 2014.

For a number of member States, responsibility for education rests with individual provinces/states rather than at the federal level. NIRs for these member States therefore reflect, as best as possible, a compilation of responses from provincial/state ministries (e.g., Canada), a report by a national coordinating body (e.g., Germany) or an overview of actions being taken at the provincial/state level (e.g., Switzerland).

A consultative approach to the compilation of the NIRs has been encouraged throughout the three phases of the ECE monitoring process. For the third report, 82 per cent of responding member States engaged at least one other government department in the compilation of the NIR: only seven member States indicated that no other government department was involved. Nearly three-quarters (71 per cent) affirmed that civil society or academic stakeholders contributed to the NIR. Private sector stakeholders were much less involved, with only nine member States indicating direct or indirect engagement with private sector interests in the preparation of the NIR.

In order to gain insight into issues that are specific to sub-regions of ECE, the data has also been analyzed by groupings of countries. This level of comparative analysis was used very cautiously because of the disparity in group sizes, with only six countries reporting in the Eastern Europe, the Caucasus and Central Asia group[3] and four countries in the South-Eastern Europe group,[4] whereas 28 countries reported in the European Union, other Western European countries and North America group.[5, 6]

Other data sources

While the NIRs provided indicators on whole-school approaches and teacher education, it did not capture data on the more specific Phase III priorities. Data on progress on these priorities was obtained through annual, informal national reports submitted by member States on progress made in the implementation Phase III of the Strategy from 2011 to 2014. Thirty-two member States responded at least once to the annual survey of initiatives under the Phase III work plan priorities (2012: 19 countries [TVET questions only]; 2013: 22 countries; 2014: 23 countries).

To enrich and support the findings of this evaluation report, government agencies and other organizations from 16 member States and five regional programmes contributed case studies on ESD initiatives (26 in total), documenting their lessons learned from 2005 to 2014 (see Annex III). Case

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[3] Armenia, Belarus, Georgia, Kyrgyzstan, Republic of Moldova and Ukraine.
[4] Bosnia and Herzegovina, Montenegro, Serbia and Turkey.
[5] Andorra, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Sweden and Switzerland.
[6] For the purposes of this report, Canada has been included in the EU/West/NA group and Turkey in South-Eastern Europe.

studies have been slightly condensed and edited for inclusion, and in some cases enhanced with data from the NIRs. In three cases (Finland, Germany and Hungary) only an excerpt of the study has been used to highlight lessons that are relevant to a specific ESD issue; references to other data provided in the full case studies are noted where relevant in the body of the report. Key points from three of the four cases provided by Belgium, as well as one of the two cases from Armenia, are also referred to in the body of the report but condensed versions of those studies have not been included.

Other data sources that were used to inform the analysis of this report include: the First and Second Evaluation Reports of the Strategy for ESD, informal member State National Reports submitted to the ECE secretariat, Reports of the working groups of the ECE ESD Steering Committee and related reports by other agencies (see Annex I for the list of sources). Consideration was also given to ECE regional coverage in the UNESCO Final Report.

Reporting across the 10 years of the Strategy for ESD

Twenty-six countries (nearly half of the 56 member States) have submitted NIRs for all three reporting periods, with another five submitting in both 2010 and 2015. One member State submitted in 2007 and again in 2015. Six member States submitted NIRs for the first time in 2015. This, however, under-represents the engagement of ECE member States in reporting on ESD across the 10 years of the Strategy:

- An additional nine countries provided reports in 2007 and/or 2010, for a total of 47 countries submitting at least one NIR during the Strategy period.
- Furthermore, 32 member States have submitted informal national reports at least once on the Phase III priorities. This group includes one that has not submitted an NIR in any of the three reporting periods.
- It is worth noting that 27 UNESCO member States from the ECE region responded to UNESCO's questionnaire for the preparation of the UN DESD Final Report. This includes three countries that have never submitted an NIR to the ECE process. (See Annex II for a list of reporting member States.)

While 38 member States have submitted NIRs, for the 2014 reporting round that covers the period from 2005 to 2014, another 13 member countries have reported at various stages to ECE and/or UNESCO on their efforts to address ESD. This suggests that at the end of the United Nations Decade of Education for Sustainable Development, which was the UNECE Strategy's original implementation period, a total of 51 countries (91 per cent of ECE member States) have engaged wholly or in part to advance ESD. Since the Strategy was adopted, only five countries have never reported to either ECE or UNESCO on their progress—representing just 9 per cent of ECE member States.

1.2 Limitations to the evaluation report

The complexity and scope of the NIR template led to variations in reporting: not all member States responded to every question and not all submitted the same level of detail. Some member States provided considerable information on a few indicators but not on others. In a number of cases, few comments were provided to clarify or enhance the quantitative data.

A number of indicators set by the Expert Group reflect progress rather than completion of work and full ESD integration. For example, one of the benchmarks considers success to be "Themes related to social, environmental and economic dimensions are addressed in the curricula at a minimum of four ISCED levels". Reaching this benchmark is an indication of the success of the Strategy but should not

be interpreted as the full integration of ESD across all levels of formal, non-formal and informal learning. Even though member States may have reached a number of such benchmarks, in their final self-assessments in the NIR they are nevertheless more modest in their overall assessment of progress on most indicators.

Comparisons with findings in the 2007 and 2010 evaluation reports were not possible for all issue areas either because quantitative data was not included in the 2007 and 2010 reports and/or because member States did not provide sufficient data to undertake a direct comparison.

To the extent possible, at least one key insight or initiative, and often more, from every reporting member State has been included in this evaluation report. However, it has not been possible to capture all activities, comments and recommendations, given the depth and breadth of information provided by most member States. Selected activities have been highlighted to illustrate the main points of the assessment, but all member States should be recognized for the contributions they have made to advancing ESD throughout the 10 years of the Strategy for ESD.

2. MAJOR FINDINGS

The progress that ECE member States have made over 10 years has contributed to the advancement of the objectives of the United Nations Decade of ESD, the Strategy and to a growing understanding across global education initiatives that education systems must respond to the social, environmental and economic challenges facing the world today. The five key findings of this report are set out as follows:

1. The securing of leadership and political will has been a critical factor in the success of the Strategy.
2. At the end of the implementation of Phase III, significant advancements have been made on four of the seven Strategy issue areas: policy integration, curricula, tools and resources, and cooperation and networking.
3. Full integration of sustainable development knowledge, skills and values by all learners, while well in progress, has yet to be realized across all levels and types of education.
4. The three priorities for Phase III—ESD school plans, teacher competences and ESD in TVET—are proving to be challenging but necessary leverage points in whole-system change.
5. Recognition that ESD lies at the core of the purpose of education has increased but remains to be fully secured across all member States.

Finding 1: *The securing of leadership and political will has been a critical factor in the success of the Strategy*. With the endorsement and support of political and administrative leadership, almost all (91 per cent) of ECE member States have participated to a greater or lesser extent in advancing ESD during the implementation of the Strategy from 2005 to 2015. Furthermore, two-thirds of member States have already provided indications to the ECE secretariat of their desire to continue to work towards full implementation. Leadership and political will have contributed to member States' ability to sustain their commitment to ESD, although concerns are expressed by some that changes in government may adversely affect the level of ongoing participation.

Finding 2: *At the end of the implementation of Phase III, significant advancements have been made on four of the seven Strategy issue areas: policy integration, curricula, tools and resources, and cooperation and networking.*

- *Policy integration:* ESD is now reflected in national education policy documents by over 90 per cent of reporting member States; 89 per cent of reporting member States consider that education is now part of their country's sustainable development policies and planning.

- *Curricula*: Member States (84 per cent) report that ESD has been included in national curriculum frameworks, with the majority of efforts focused on primary, lower and upper secondary levels. While the environmental dimension continues to receive most of the attention, it is encouraging to see the levels of effort to address social and economic themes as well.

- *Tools and resources*: Government, academic and civil society stakeholders in all reporting member States are involved in the development and production of ESD materials. However, while the supply may be growing, the demand is unknown. Mechanisms to promote and disseminate the materials vary widely from country to country and the extent to which these materials are being used is difficult to assess.

- *Cooperation and networking:* Member States (95 per cent) report that ESD implementation is a multi-stakeholder process that includes a wide range of working groups, councils, networks and partnerships. Regional cooperation is strong, and the role of different stakeholders, especially civil society actors, is recognized and appreciated.

Finding 3: *Full integration of sustainable development knowledge, abilities and values, while well in progress, has yet to be realized across all levels and types of education.* Many of the indicators of success for the Strategy as set out by the Expert Group on Indicators have been met, but reporting member States nevertheless cautiously consider that they are still "in progress" or "developing" towards a comprehensive implementation of ESD across all levels of education. The majority of advances reported by member States are in explicitly addressing ESD themes in the curricula (97 per cent), competences and learning outcomes (92 per cent) and pedagogical approaches (95 per cent) at the earliest levels of early childhood learning, as well as primary and secondary levels of formal education. Less is known about ESD in higher education, although member States report that higher education institutions in the region are increasingly engaged in ESD through high-level affirmations by university leaders and through networks of committed institutions.

Progress on non-formal and informal learning is less clear: on the one hand, close to 90 per cent of member States report that various ESD methods and instruments are available for non-formal and informal learning; on the other, at least half of member States suggest that they have either not started or are just in the first stages of advancing ESD in non-formal and informal learning. Member States presented a wide range of non-formal and informal ESD learning initiatives, but acknowledged that many of these have been undertaken independent of, or in partnership with, a range of government agencies. Non-governmental organizations (NGOs) appear to be playing a significant leadership role in the promotion of ESD in non-formal and informal settings. However, less is known about the extent and effectiveness of these efforts as there is no central mechanism for documenting initiatives and they are rarely evaluated.

Finding 4: *The three priorities for Phase III—ESD school plans, teacher competences and ESD in TVET—are proving to be challenging but necessary leverage points in whole-system change.*

Priority I – *ESD school plans*: Nearly three-quarters (71 per cent) of member States report promoting whole-institution approaches. With respect to school plans, most continue to focus on enhancing sustainable development in the curriculum and classroom through projects and/or the promotion of voluntary schemes for individual schools to seek ESD recognition and certification.

Priority II – *Teacher competences:* Close to 90 per cent of member States report that ESD is now a part of educators' initial and in-service training, although the qualitative comments provided suggest that many are cautious about how widespread and transformative the support is for ESD, given the autonomous nature of teacher education institutions in many countries. It is also not clear whether significant numbers of teachers have been trained to date.

Priority III – *ESD in TVET:* From 2012 to 2015, some member States have moved beyond discussions of what constitutes a green economy and green jobs to concerted efforts to retool TVET to support sustainability, in consultation and partnership with industry sectors and TVET institutions. However, while new competences and skills are being defined, new courses developed and TVET programming revised in some member States, less than half of member States indicate that significant progress has been made.

Finding 5: *Recognition that ESD lies at the core of the purpose of education has increased (Buckler and Creech, 2014); however, it is still to be fully secured across all member States.* A

number of challenges and obstacles have persisted throughout the Strategy for ESD period, such as securing structural reform of education systems and embedding ESD in mainstream budgets, preparing educators, strengthening mechanisms for cooperation and engagement across a broader cross-section of stakeholders, and addressing the need for more ESD research, monitoring and evaluation. While leadership and political support for ESD have been critical success factors over the past 10 years, the commitment to long-term, sustained leadership and political will among decision-makers may not continue to be present going forward. These various obstacles suggest that an overarching challenge continues to be securing recognition that ESD lies at the core of the purpose of education: to prepare the learner with the knowledge, skills and attitudes to understand, respond and prosper in the face of the economic, social and environmental challenges of today's world.

Overcoming these challenges and continuing work on ESD will require developing, refreshing and expanding ESD strategies and plans, and securing existing and new partnerships and collaborations, such as working with UNESCO through the Global Action Programme for ESD (GAP). In a new phase of work, opportunities to integrate ESD further into education and sustainable development policy may be driven by growing national sustainable development and green economy planning and commitments to regional and international sustainable development conventions and the new Sustainable Development Goals. Work on the three priority leverage points—school plans, teacher preparation and TVET in support of greening economies—should continue. More systematic attention should be given to progress on non-formal and informal learning, and special consideration given to advancing ESD research, monitoring and evaluation as essential inputs to strengthening ESD.

3. PROGRESS TOWARDS MEETING THE STRATEGY'S OBJECTIVES

In the Czech Republic, ESD is implemented particularly by the influence of the UNECE Strategy for ESD and the Strategy for ESD of the Czech Republic, which is based on the UNECE Strategy for ESD (Czech Republic, NIR).

3.1 Overall status of ESD implementation

On completion of the NIR, member States were encouraged to reflect on the status of ESD implementation in their country and to identify one of four stages of progress for each of the 18 major indicators: not yet started; in progress; developing; and completed. This self-assessment exercise has provided an important overview of the general status of ESD implementation across the region and provides another lens on the more detailed reporting compiled in the NIR. On balance, the majority of member States report considerable activities across all the criteria for success on the Strategy and, in many cases, have met or exceeded those criteria. But meeting those criteria is not the same as having achieved full implementation of ESD, and the self-assessment ranking provides an important qualification on the progress that member States have made. The averaged or mean rankings suggest that these States as a whole consider that they are well "in progress" on advancing ESD across all indicators (Chart 1), with member States on average at a more advanced stage on two indicators in particular: having prerequisite measures in place and having introduced sustainable development themes into formal education. However, while a number of individual member States have reached "completion" on selected indicators, on average, the region as a whole has more work to do to secure full implementation on the issues to be addressed by the Strategy.

Variations among the three regional groupings are relatively minor. Eastern Europe, the Caucasus and Central Asia and South-Eastern Europe member States on average are at the "in progress" stage on most indicators. European Union, other Western European countries and North American member States are closer to the more advanced "developing" stage but, as a whole, this group has made more progress on policy, legislation, curriculum and strategies for implementation.

The self-assessment provides an important summary of member States' views of their progress against each indictor. The following sections consider in greater detail each of the seven major issues to be addressed by the Strategy for ESD, as well as related indicators and sub-indicators, together with qualitative information provided by member States to enhance and clarify their reporting.

Chart 1: Member States' self-assessment of progress: Mean scores on ESD indicators
Completed = 3; Developing = 2; In progress = 1; Not started = 0

Indicator	Score
Prerequisite measures are taken to support the promotion of ESD	2.03
Policy, regulatory and operational frameworks support the…	1.78
National policies support synergies between processes related to…	1.83
SD key themes are addressed in formal education	2.21
Strategies to implement ESD are clearly identified	1.69
A whole-institution approach to ESD/SD is promoted	1.43
ESD is addressed by quality assessment/enhancement systems	1.24
ESD methods and instruments for non-formal and informal…	1.21
ESD implementation is a multi-stakeholder process	1.80
ESD is included in the training of educators	1.74
Opportunities exist for educators to cooperate on ESD	1.80
Teaching tools and materials for ESD are produced	1.71
Quality control mechanisms for teaching tools and materials for…	1.17
Teaching tools and materials for ESD are accessible	1.91
Research on ESD is promoted	1.29
Development of ESD is promoted	1.63
Dissemination of research results on ESD is promoted	1.17
International cooperation on ESD is strengthened within the ECE…	1.59

Source: ECE NIRs, 2015.

3.2. Issue 1: Policy, regulatory and operational frameworks that support the promotion of ESD

The National Strategy For Development "Moldova 2020" recognize[s] that "Education has an essential role in combating poverty and ensuring sustainable economic development" [and that] "lifelong learning is seen as a fundamental pre-condition for long term sustainable development and economic competitiveness" (Republic of Moldova, NIR).

Success criteria

Basic prerequisites achieved; ESD explicitly mentioned in national legislation and/or policy documents; National ESD action plan developed and implemented through interdepartmental and multi-stakeholder processes.

Over the Strategy's original 10-year period, member States have laid the foundation necessary to advance ESD, with the establishment of focal points (84 per cent) and coordinating bodies (72 per cent) needed to champion, build relationships and sustain momentum on ESD (Chart 2). For example, Germany created the National Plan of Action for implementing both the UN DESD and the Strategy for ESD in Germany, and it also established two main governing bodies: the German National Committee and Round Table (see case study 2). Roughly three-quarters of member States have also put in place national implementation plans (71 per cent) and have sought synergies at the national level between the ESD process, the DESD and other policy processes relevant to ESD as a necessary step in gaining support for changes in policy, regulatory and operational frameworks (76 per cent). ESD has now been reflected in national education policy documents by over 90 per cent of reporting member States (Chart 3). Equally important, 89 per cent of reporting member States consider that education is now part of their country's sustainable development policies and planning (Chart 4).

Chart 2: Prerequisite measures taken to support the promotion of ESD

Chart 3: Policy, regulatory and operational frameworks support the promotion of ESD

Chart 4: Is ESD part of your country's sustainable development policy(ies) (if these exist in your country)?
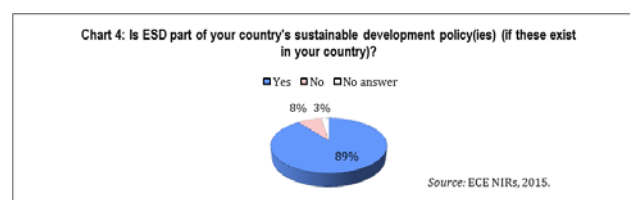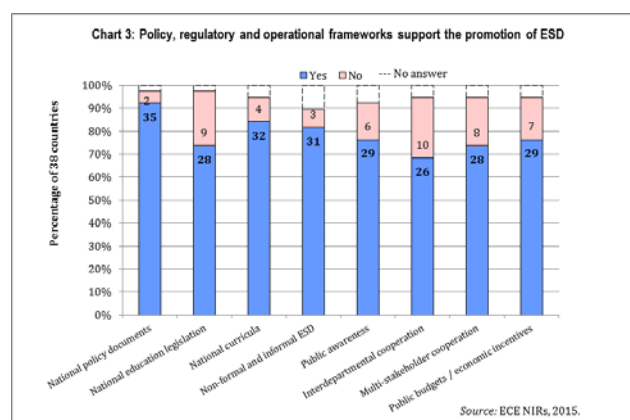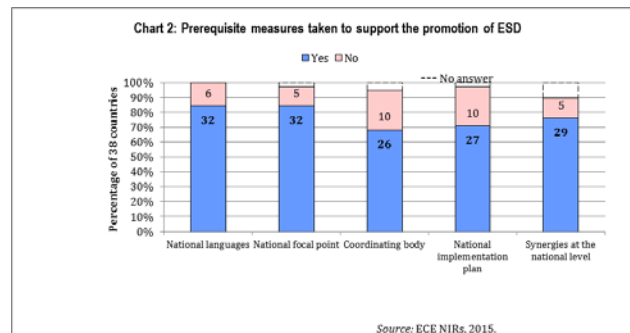
This convergence can be seen at the highest levels of national vision statements. In Finland, for example, the national concept, *Society's Commitment to Sustainability,* has been launched: "Through the commitment, the government and the administration, in collaboration with various societal actors, pledge to promote sustainable development in all their work and operations. [...] The operational commitments include concrete measures, changes in operating procedures and innovative trials that promote the shared goals. [...] [As of October 2014], by far most of the operational commitments are related to education [more than 30 per cent of all] (Finland, NIR)."

Moving from vision to strategy, several member States report the integration of education into umbrella sustainable development objectives. A number of member States (such as Austria, Estonia [see case study 1] and Romania) report that education is now a component of their National Strategy for Sustainable Development. National/state concepts of the green economy have influenced jurisdictions such as Denmark and Manitoba (Canada), where work on ESD is being aligned with green growth planning. In some cases, ESD appears across a mix of national strategies, such as in Poland with the introduction of ESD into its national strategic documents *Strategy for Energy Security and Environment*, *Strategy for Innovation and Efficiency of the Economy*, as well as *Perspective for Lifelong Learning*. These strategies are part of a core set of the most important strategic documents in Poland, which forms a blueprint for the country's development (Poland, NIR).

In Latvia, the government developed *Latvia's Guidelines for Education Development Strategy 2014–2020*. This is "a medium-term policy planning document defining the basic principles, goals, and lines of action of education development policy covering all types and levels of education. The main goal of the policy is high-quality and inclusive education for personal development, human welfare and reaching sustainable national growth. The basic principles stated in the Guidelines are: 1) human-orientated education; 2) education that promotes knowledge-based society; as well as 3) education for sustainable development" (Latvia, NIR).

Furthermore, ESD is now being included in the strategies and planning of other government departments. Cyprus, for example, describes how ESD now appears in the Department of Agriculture's *Cyprus Rural Development Programme 2007–2013*, the Ministry of Health's programmes, the Ministry of Industry and Trade's *National Energy Efficiency Action Plan* and the *National Action Plan for Renewable Energy* (Cyprus, NIR).

Related tools for the implementation of ESD policy are also being developed and utilized, with three-quarters (74 per cent) addressing ESD in national education legislation and regulatory instruments. For example, Serbia's Law on *Fundamentals of the Education System* has incorporated into its education and pedagogy objectives the mandate "to raise awareness about the importance of sustainable development, protection and preservation of nature and environment, ecology-related ethics and the importance of animal protection" (Serbia, NIR). Slovenia's *Organisation and Financing of Education Act* (2008) "sets as an aim education for sustainable development and active social integration in the democratic process" (Slovenia, NIR). Many member States go further to provide public budgets and other economic incentives to support ESD (76 per cent). Montenegro highlights that its Bureau for Education has included special financial lines in its budget for the development of ESD-related curricula and teacher training programs including counselling in the

schools (Montenegro, NIR). However, there are some member States that have indicated that a special budget is not allocated for education for sustainable development per se, but relevant projects are supported. In Turkey, for example, a national contribution is provided for selected projects (Increasing Enrolment Rates Especially of Girls Project, Education for Democratic Citizenship Project, etc.) that support ESD (Turkey, NIR).

Twenty-eight member States reported the adoption of new and amended legislation and regulatory instruments, primarily at the primary, lower and upper secondary levels (Chart 5). Nearly 85 per cent of reporting member States have moved beyond policy frameworks to ensure that ESD is included in the curriculum and/or standards, mostly at the primary and secondary levels of education (Chart 6):

> **Greece:** ESD is reflected in documents that refer to: a) the implementation of the new curricula/programmes of study; b) the teachers' initial and in-service training; c) the implementation of an educational assessment system; and d) the regulatory framework that supports "the school of (the) 21st century" (Greece, NIR).

> **Malta:** The inclusion of ESD in the *National Curriculum Framework* and the subsequent compilation of ESD learning outcomes as part of the Learning Outcomes Framework project have provided official recognition of the importance of ESD (Malta, NIR).

> **Slovenia:** ESD is integrated into the national curriculum at all levels of formal education (early childhood, primary, lower secondary, upper secondary and vocational education) (Slovenia, NIR).

> **Slovakia:** The National Strategy for Global Developmental Education 2012–2016 includes environmental, socio-cultural and economic aspects of education (see case study 3).
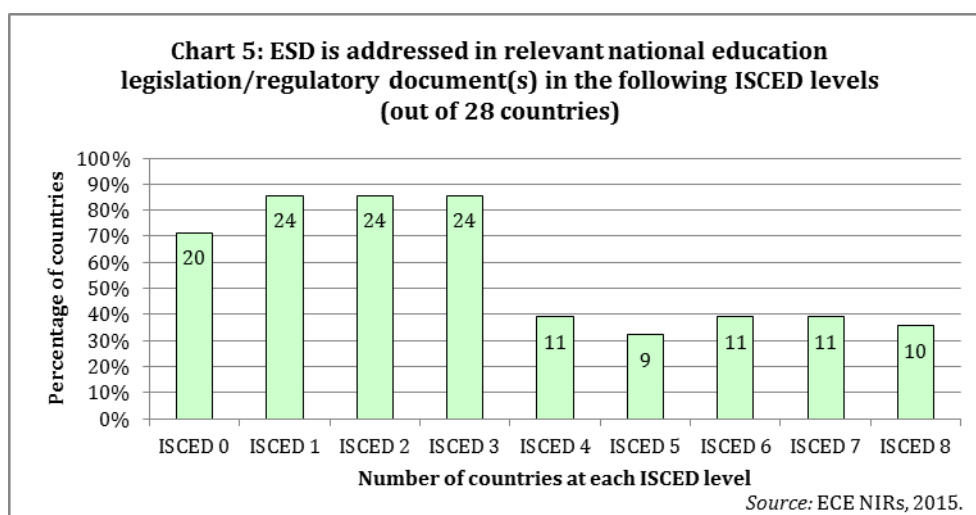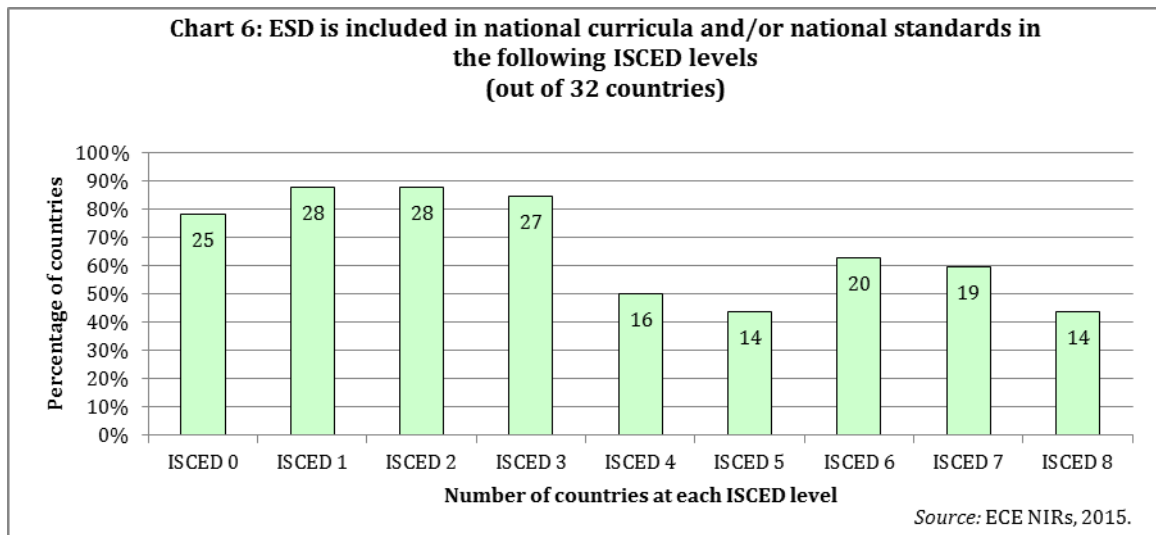
Chart 5: ESD is addressed in relevant national education legislation/regulatory document(s) in the following ISCED levels (out of 28 countries)

Source: ECE NIRs, 2015.

Chart 6: ESD is included in national curricula and/or national standards in the following ISCED levels (out of 32 countries)

Source: ECE NIRs, 2015.

ISCED levels

0. Early childhood education
1. Primary education
2. Lower secondary education
3. Upper secondary education
4. Post-secondary non-tertiary education
5. Short-cycle tertiary education
6. Bachelor's or equivalent level
7. Master's or equivalent level
8. Doctoral or equivalent level

The first level of formal education—early childhood care and education (ECCE)—has been recognized as "the foundation for sustainable development and the beginning point for ESD" (Buckler and Creech, 2014, p. 10), and it is encouraging to see 20 member States addressing ESD in legislative and regulatory arrangements for ECCE, and 25 addressing ESD in ECCE curricula and standards. Monaco highlights the continuity of ESD from the earliest stages of learning: La sensibilisation des élèves dès l'age de 3 ans et en continu jusqu'à la fin de leur scolarité : tout au long de leur parcours scolaire, l'élève est sensibilisé à cette notion, de manière à ce qu'il puisse devenir un éco-citoyen [Educating students from the age of 3 years and continuously until the end of their schooling: throughout their schooling, students are aware of this concept, so they can become an eco-citizen] (Monaco, NIR).

In Sweden, the national curriculum for early childhood education has a continuing focus on nature and the environment, demonstrated by its focus on environmental and nature conservation issues and its ecological approach, as well as on acquiring a caring attitude towards nature and the environment and on promoting a positive belief in the future. Swedish preschools are also expected to work with democratic values and child participation as foundations for learning and interaction (Sweden, NIR).

Progress at the tertiary levels of formal education is less clear, with lower numbers of member States reporting advances at these levels. Given the autonomous nature of tertiary-level institutions in many countries, responding member States may have been limited in their ability to report on progress at ISCED levels 4 through 8 (covering post-secondary non-tertiary education, short-cycle tertiary education, bachelor's or equivalent level, master's or equivalent level, and Ph.D. or equivalent level).

Some member States suggest that this is an area that requires further attention. Germany, for example, notes that for ESD in higher education, there only exists a

statement of the Conference of University Rectors and the German Commission for UNESCO, which includes ESD but no legislation or curricula. Finland suggests that because the higher education institutions (HEIs) are autonomous and each independently decides on its curricula and research activities, the situation [of ESD] among the HEIs (polytechnics and universities) varies.

Member States have reported on some important progress in promoting ESD in HEIs. For example, in Finland, the HEIs negotiate operational and qualitative targets, as well as resource requirements, with the Ministry of Education and Culture. For the agreement period of 2013–2016, the institutions and the Ministry have agreed that the principles of sustainable development will be central to all HEI activities (Finland, NIR). In Sweden, the Higher Education Act now instructs HEIs to promote sustainable development that ensures present and future generations a healthy and good environment, economic and social welfare and justice. ESD is also included in various educational programmes and courses, but at the discretion of the universities (Sweden, NIR).

Outside of the ISCED formal education levels, progress on non-formal/informal education and public awareness of sustainable development also appears to be advancing, with a majority of member States reporting ESD being addressed in policy and regulatory documents and operational frameworks for these areas (82 per cent and 76 per cent respectively). This progress is, however, tempered by member States' overall assessment that ESD methods and instruments have not as yet been widely adopted for non-formal and informal learning (Chart 1, above). Member States' responses in general acknowledge that sustainable development must be addressed in other forms of learning—that formal education alone is not sufficient to support a transition to more sustainable societies. As Norway stipulates, "the importance of non-formal and informal learning is recognized, and aims to be achieved through organizations and services complementing the formal system; awareness-raising is addressed in order to change behaviours [towards] sustainable development" (Norway, NIR). Slovenia reports that non-formal and informal ESD have been included in the National Master Plan for Adult Education 2013–2020 as a priority task, as one of 15 long-term goals and, on the implementation level, as one of the priority content areas of programming for adults (Slovenia, NIR).

Looking forward: Opportunities for advancement on Issue 1: policy, regulatory and operational frameworks supportive of ESD

Consider new phases for national ESD strategies and plans: Many member States have committed to build on what they have accomplished through new phases for ESD strategies and plans. Armenia reports that the development of the National Strategy for ESD and Plan of Activities for 2016–2025 is in progress (Armenia, NIR). In Romania, improvements to the legal framework on education that supports the promotion of ESD are to be finalized shortly (Romania, NIR). In the Ukraine, ESD has been embedded in the National Doctrine of Education Development and in the nationwide curriculum. It now intends to address questions of national standards and ESD criteria for educational services, to be presented for public discussion and further developed (Ukraine, NIR). In Ireland, The National Strategy on Education for Sustainable Development covers the period 2014–2020. It includes provision for a mid-term review in 2017 that will take into account relevant developments at the international level. In Sweden's UNESCO Strategy 2014–2017, ESD is a prominent component that will be further prioritized during the period of 2014–2017 (Sweden,

NIR). The 10th Five-Year Development Plan in Turkey, covering the period of 2014–2018, presents initiatives and measures that reflect all components of sustainable development, including ESD.

Promote further integration of sustainable development into education and education into sustainable development objectives: As the UNESCO Final Report asserts, increasingly education decision-makers are reconsidering the overarching purpose of education and its relevance to the social, environmental and economic challenges that the world faces. Simultaneously, "stakeholders for sustainable development are increasingly taking up education, public awareness and training to advance sustainable development" (Buckler and Creech, 2014, p. 28). ECE member States should continue to pursue the alignment and integration of education policy and sustainable development policy. As Germany suggests in its 2013 Peer Review Report, there is now "a firm foundation to consolidate what has been achieved so far and to integrate sustainability more securely throughout all parts of German government, business and society. Central recommendations include building sustainability more systematically into all levels of education. The German Council for Sustainable Development has since scaled up considerably its efforts to strengthen ESD at the local policy level and at institutes of higher education" (Germany, NIR).

Review the wide range of mechanisms for securing and leveraging public funds: Financial support and incentives for ESD have varied widely among ECE members, ranging from mainstream education budget allocations to project grants and co-financing with stakeholders. A review of experience in financing ESD may be helpful to those countries continuing to struggle with securing, sustaining or increasing public funds for advancing ESD.

3.2.1. Issue 1: Case studies

Highlights
- Since 2002, sustainable development has been incorporated as a cross-curricular objective in the national curriculum
- During 2013–2015, more than 600 educators were trained in ESD

Overview
Estonia has been an early adopter of ESD, incorporating sustainable development as a cross-curricular objective in its National Curricula since 2002. Active participation in the 2002 Agenda 21 for Education in the Baltic Sea Region has included an ESD action programme that led to the nomination of national ESD coordinators for formal, higher and non-formal education. These early initiatives have created a positive climate for full engagement in the Strategy for ESD.

At the start of the DESD and Strategy for ESD, more systematic implementation of ESD in Estonia was undertaken, anchored in cooperation among the Estonian Ministry of Education and Research, the Ministry of Environment and the Estonian Commission for UNESCO. Both ministries provided financial resources, complementing the core support provided through European Union Structural Funds.

Process
In advancing ESD across the curriculum, the emphasis has been on the interrelationship among natural, social and cultural environments, and on developing responsible attitudes to sustainable development. As of 2015, ESD is a part of teaching and learning from Form 1 through to Form 12. Opportunities for teaching ESD concepts are presented in all subjects. All Estonian schools have to prepare the school curriculum on the basis of the National Curricula, which requires that sustainable development concepts be integrated into everyday school life. The curriculum is flexible enough to cope with differences at the local level and in individual schools. At the school level, course studies can be complemented through collaboration with regional and local institutions, enterprises and civic associations.

Teacher development is a top priority in Estonia. Initial teacher education is provided by universities and professional higher education institutions. Teachers of all levels are expected to obtain professional and didactical competences and skills to create a safe study environment, to develop school curricula, to co-operate with other teachers and to implement the cross-curricular topic of environment and sustainable development. In 2013, the government issued a call for the preparation of in-service training curricula and training courses for teachers of formal education and universities and non-formal environmental education professionals. The objective of the programme was to equip educators and non-formal environmental education specialists with the competences to implement active learning methods and integrate the cross-curricular topic of environment and sustainable development into their everyday teaching. The two main state universities, which provide initial teacher education, prepared in-service training curriculum and programmes and organized the ESD courses. During 2013–2015, more than 600 educators were trained in ESD.

Outcomes
Estonia's overall assessment of its progress is that it has implemented successfully the ECE Strategy for

ESD. This foundation can now be built upon to make sustainable development an integral part of education. But the crucial work of implementing ESD across everyday education practice is still ahead.

Sources: Estonia, case study; Estonia, NIR.

Case study 2: Framework and coordination for ESD Implementation in Germany, a federated education system

Highlights
- Over 2000 projects recognized for their ESD good practice
- ESD has been reflected in the National Sustainability Strategy
- 13 of the 16 German Federal States formulated their own action plans for the UN DESD

Overview

Responsibility for education in Germany lies primarily with the *Länder* (federal states). Coordination efforts during the UN DESD have served to advance ESD across the 16 states. When the UN DESD was proclaimed in 2002, intensive preparatory work began in Germany for its implementation, recognizing that in a federated system, effective mechanisms for engagement and collaboration with the states and all other stakeholders would be required. The German Commission for UNESCO assumed the coordination of the Decade activities under a German Bundestag (federal parliament) resolution in 2004 with the support of the Federal Ministry of Education and Research. The two main governing bodies—the German National Committee and Round Table—and a coordinating office began work in the same year. This made it possible to present the first National Plan of Action with detailed recommendations for implementation in time for the Decade's commencement in 2005 and the start of the Strategy for ESD.

Process

The top-level advising and governing body, the National Committee, represents several federal and state ministries, the Parliament, non-governmental organizations, the media, the private sector and the scientific community. The National Committee intermediates between the initiators and stakeholders of ESD by bringing together partners, projects and initiatives. It also coordinates and monitors national implementation and puts it in an international context.

The National Plan of Action is the central policy document for implementing both the UN DESD and the Strategy for ESD in Germany. The primary objective of the National Plan of Action was nothing less than to anchor the idea of sustainable development in all areas of education. To take the plan into action, more than 100 sustainability and education stakeholders from all over Germany came together once a year at the Round Table, with all 16 federal states represented. The focus was on strengthening networks among stakeholders as well as discussing strategic questions related to ESD. The Round Table provided the inspiration for many new activities and cooperation projects. Working groups were also initiated to focus in-depth on different aspects of education sectors or sustainable development topics. The working groups developed concrete guidelines to embed sustainable development in their respective educational areas. This coordination has helped to create the bridge between the decision-makers in ministries and the stakeholders on the ground.

In 2005 as part of the implementation of the UN DESD, the Federal Ministry for Economic Cooperation and Development and the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* (the Standing Conference) decided to develop a curriculum framework for ESD linked to the curricula of secondary-level subjects and identifying ESD competencies

within those subjects. Starting with guidelines for primary education, general suggestions for TVET and examples for the subjects that are traditionally more closely linked to ESD (such as nature, biology, geography, politics and ethics), the first edition, *Orientierungsrahmen für den Lernbereich Globale Entwicklung* (Cross-Curricular Framework for Global Development Education in the Context of ESD), was published in 2007. The Standing Conference provided the document to all curriculum developers at the regional and local levels as one of the general guidelines for school development. In the following years, the Framework has influenced the development of new subject-based curricula in the federal states. Additionally, it offers a basis for NGOs to cooperate with schools and has had substantial influence on educational programmes.

In 2010, the Standing Conference established a new team to formulate an extended version of the Cross-Curricular Framework to address all subjects and support the whole-school approach to ESD. This version was launched in 2015, providing a set of specific ESD-linked competencies, special topics and a lesson example for all grade 8/9 subjects including mathematics, language, arts, music and sports. The new chapter on the whole-school approach links ESD in the subject lessons with the overall work and life at school, including social interaction within the school and cooperation with partners from outside.

The Cross-Curricular Framework and the more recent extended version have also found their way into teacher education. In addition, extensive support for teachers and educators has been provided by an initiative of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety by establishing a well-received online platform and

information service for educational materials, activities on sustainable development topics across all education sectors.

Outcomes

Over the duration of the UN DESD and Strategy for ESD, Germany notes the following benchmarks:

- ESD has been reflected in the National Sustainability Strategy adopted by the Federal Government in 2002 (updated in 2012).
- 13 of the 16 German Federal States formulated their own action plans for the UN DESD.
- Some of the states have already started to implement ESD in the next generation of curricula and educational standards.
- The German Council for Sustainable Development has scaled up considerably its efforts to strengthen ESD at the local policy level and at institutes of higher education.
- Several German Federal ministries support ESD. In particular, the Federal Ministry of Education and Research, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, and the Federal Ministry for Economic Cooperation and Development have allocated financial resources to ESD activities.

A highly successful instrument of the National Plan of Action was the official award scheme for innovative ESD projects. Recognizing and highlighting high-quality ESD work has led to increased visibility for ESD overall. Over 2000 projects have been awarded and are publicized in a database as beacons of good practice.

Throughout the last 10 years it has become clear that follow-up activities are indispensable. The progress of ESD in Germany has led to an increase in its

inclusion in policy, regulatory and operational frameworks at local, federal state and national levels. The effective coordination structure will be continued in an adapted and strengthened way in UNESCO's Global Action Programme 2015–2019 and the future ECE implementation framework.

Sources: Germany, case study; Germany, NIR.

Case study 3: Approaches to operationalizing ESD in Slovakia's national education system

Highlights
- Slovakia has high-level commitments to ESD
- Slovakia annually earmarks funds from its budget for schools to implement projects that promote environmental education
- Within the *Enviroprojekt* project alone, 437 projects were implemented during 2004–2015 by primary and secondary schools

Overview
The implementation of ESD in Slovakia has been grounded in high-level commitments, government directives, amendments to education legislation, and training and accreditation for teachers and tertiary institutions. Based on the agreement of the Slovak Minister of Education, Science, Research and Sport and the Minister of Environment, the Environmental Committee for Education was established in 2005 to carry out education tasks that would support sustainable development across Slovakia. In 2006, the Committee updated the *Concept of Environmental Education* pursuant to sustainable development principles and prepared the *Action Plan for Education towards Sustainable Development* in Slovakia (Resolution of the government of the Slovak Republic No. 574/July 13, 2005). Within this framework, the Slovak Republic committed to carry out the Strategy for ESD and determined new principles, objectives, conditions, methods and forms of school education. More recently, the *National Strategy for Global Developmental Education 2012–2016* provides the mandate to implement the fourth Action Plan on global education, which includes environmental, socio-cultural and economic aspects of education.

Process
The School Educational Programme was prepared in accordance with the National Educational Programme under the School Act No. 245/2008 and amendments. This has been the fundamental pedagogical document for kindergarten through to secondary schools. It emphasizes developing the competences of pupils to understand and form their own behaviours and social responsibility to the environment and a healthy way of life, as well as to appreciate the interconnectedness of local, national and international issues. Kindergartens use *The National Educational Programme for Pre-Primary Education* to prepare their school programmes, which now include environmental education as a cross-cutting theme. At primary and secondary schools, the national educational programs require cross-cutting themes throughout the curriculum, such as multicultural education, personal and social development, environmental education and healthy lifestyles. Cross-cutting themes are considered to be an important element of education and support the development of key competences, particularly where attitudes and values are concerned. The Ministry of Education annually earmarks funds from its budget for schools to implement projects that promote environmental education, such as *Enviroprojekt*, and healthy lifestyles, such as *Zdravie a bezpečnosť v školách* (Health and Safety at Schools).

The Ministry of Education publishes annually the *Pedagogical and Organizational Instructions* for the school year, which includes recommendations for schools to apply a global dimension in school

programmes, develop the environmental education of pupils and participate in various national and international competitions, projects and programmes.

Schools have flexibility in how they implement the Ministry's directives and instructions. In some cases, the cross-cutting themes of environment and sustainable development are integrated into various school subjects; in others, they are separate subjects, each with plenty of scope for suitable classroom and field projects. Every school has the authority to select the method, project and time of implementation of a cross-cutting theme.

In order to advance the *National Strategy on Global Developmental Education*, the Ministry of Education committed in 2012 to engage teacher education programmes. By letter No. 2012-13433/37123:1-071, colleges were recommended to take account of the objectives and topics of global education in the preparation of future teachers. Continuing education for in-service teachers and professional employees is provided by the National Institute for Education, Methodological and Pedagogical Center. As of 2014, the Center has offered education and training aimed at improving competences of pedagogical and professional employees of schools and educational facilities in connection with the Action Plan on global education.

The Section of Colleges, Science and Research of the Council of the Slovak Government for Sustainable Development participated in the preparation of the *National Strategy on Global Developmental Education*. It also contributes to carrying out the tasks of the Action Plan. For now, Slovak legislation, ordinances, regulations or decrees do not envisage any special mandated requirements in the field of tertiary education on sustainable development. However, the Action Plan encourages several tasks for tertiary educational facilities, including the implementation of fundamental sustainable development principles in the curriculum, the accreditation of environmental and ecological study programmes, exploring sustainable development through research, and building new science and technology centres and parks at colleges.

Outcomes
As an outcome of these efforts, changes can be seen across the formal education system in the Slovak Republic. Kindergartens are now significantly represented in the *Zelená škola* (Green School) project, targeted at the implementation of environmental activities. In primary and secondary schools, education projects have contributed to curriculum content, workshops, and methodological materials. In various regions of Slovakia, pupils build educational trails, implement social programmes, solve problems using energy and renewable sources, deal with the issue of waste, and clean parts of protected areas, water and cultural sights. Within *Enviroprojekt* alone, 437 projects were implemented during 2004–2015 by primary and secondary schools. At the tertiary level, the recognition of the importance of sustainable development to the economy and environment has led to a general strengthening of tertiary education, with improved access to tertiary education and increased numbers of graduates. As of 2005, 60 programmes of environmental and ecological study have been accredited, and sustainable development is now the subject of projects in education, research, development, information technologies, etc., funded through the Cultural and Educational Grant

Agency, Scientific Grant Agency of the Ministry of Education.

As important as the mandated approach has been, Slovakia also recognizes that the educational process is the result of collaboration among all stakeholders. This includes not only central state administration bodies, but also professional institutions, municipalities, civil societies and businesses.

Source: Slovak Republic, case study.

3.3. Issue 2: The promotion of sustainable development through formal, non-formal and informal learning

Education for Sustainable Development requires a redefinition of education. It is based on pedagogical principles such as interdisciplinarity, value orientation, cultural awareness, problem-solving orientation, methodological diversity, participation and local relevance. The overall aim is to empower the individual to shape society in a reflected, responsible manner (Austria, NIR).

Success criteria
• Themes related to social, environmental and economic dimensions are addressed in the curricula at a minimum of four ISCED levels;
• Themes are addressed in an integrated manner;
• The four learning competences (Learning to Know, Do, Be, and Live and Work together) are addressed, covering at least three expected outcomes;
• At least one national programme supporting a whole-institution approach exists;
• ESD is addressed in a statutory quality assessment system in at least one ISCED level;
• At least one example is given of SD issues being addressed in both non-formal and informal education, with the example(s) demonstrating how evaluation results have been used to improve practice;
• Most of the stakeholder groups are involved.

ECE affirms that education must play a role in enabling people to live together sustainably (UNECE, 2012*a*, p. 6) and that this will require working with learners across all levels and types of education, formal, non-formal and informal. As described in the UNESCO Final Report:

➢ Formal education is carried out in school, college and university systems and is based on an established curriculum and on approved teaching and assessment methods;

➢ Non-formal education occurs outside the formal system, but through other organized learning settings; and

➢ Informal education results from daily life activities related to work, family or leisure, and is provided within families, religious organizations, and community groups, as well as by news organizations, social media and various forms of entertainment (Buckler and Creech, 2014, p. 20).

Sustainable development knowledge and learning outcomes across formal curricula

Within formal education, nearly all responding member States report they are explicitly addressing key sustainable development themes in curricula (97 per cent) and explicitly addressing broad competences and learning outcomes supportive of sustainable development (92 per cent). Furthermore, these are not just one-off initiatives: the levels of effort are significant. Two-thirds of member States have reported that the numbers of initiatives to address sustainable development themes in the curricula across International Standard Classification of Education (ISCED) levels of education fall into the highest ratings ("Progressing", "Advanced" and "Maximum") set by the Expert Group on Indicators. Over half (55 per cent) also recorded numerous interventions across ISCED levels to address the broad competences of learning to know, learning to do, learning to be, and learning to live and work together (Chart 7).

Chart 7: Ratings of efforts to promote SD through learning

Legend: ■ A (minimum) □ B (initial) □ C (moderate) ■ D (progressing) □ E (advanced) ■ F (maximum) □ No rating

Key themes: 2 | 0 | 2 | 6 | 11 | 15
Learning outcomes: 10 | 2 | 7 | 10 | 11

X-axis: Percentage of countries (0% to 100%)

Source: ECE NIRs, 2015.
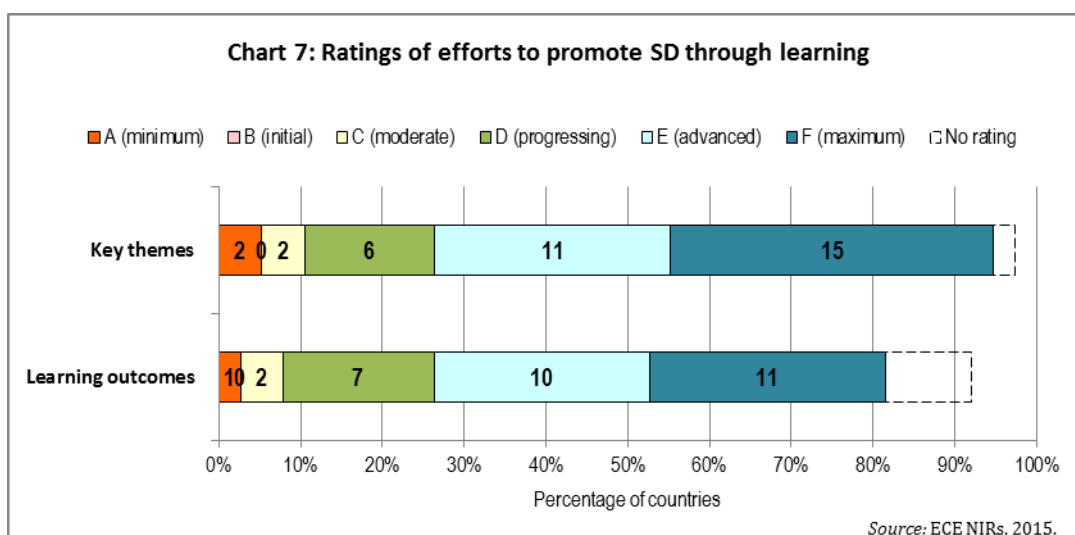
In at least 50 per cent of reporting States, all three dimensions of sustainable development (social, economic and environmental) are being addressed at a minimum of four of the ISCED levels, meeting or in many cases exceeding the target set by the Expert Group on Indicators for ESD. Charts 8 through 11 illustrate the distribution of member State efforts across 17 sustainable development–related themes and nine ISCED levels. While the environmental dimensions continue to receive the most attention, it is also encouraging to see the levels of effort given to address social and economic themes across all levels of education.

The Strategy also promoted an integrated approach to addressing sustainable development themes. Member States indicated a wide range of strategies, from addressing ESD in existing subjects, cross-curricular approaches, provision of specific subject courses and programmes, and stand-alone projects. Nearly all (95 per cent) report that a cross-curricular approach is taken in at least one or more ISCED levels of education, in addition to a mix of other strategies.

Chart 8: SD themes in early childhood care and education

Number of countries

Source: ECE NIRs, 2015.

Chart 9: SD themes in primary and secondary

- ISCED 3: Upper secondary
- ISCED 2: Lower Secondary
- ISCED 1: Primary

Number of countries

Source: ECE NIRs, 2015.

Chart 10: SD themes in post-secondary non-tertiary and short cycle tertiary

- ISCED 5 Short cycle tertiary
- ISCED 4: Post-secondary non-tertiary

Number of countries

Source: ECE NIRs, 2015.

Chart 11: SD themes in Bachelor's, Master's and Doctoral

Source: ECE NIRs, 2015.

Most responding member States described the many approaches taken to addressing ESD in the curriculum—from embedding ESD in education frameworks and requirements for knowledge, skills, attitudes and competences, together with full integration across all levels of education up to upper secondary, to experimental curricula with sustainability-focused modules, to support given to extracurricular activities such as field studies and competitions.

In the case of Austria, at the primary and secondary levels, "the instruction principle of Environmental Education has just recently been revised, and is now called 'Environmental Education for Sustainable Development' and integrates ESD in many aspects. Nevertheless it will be the aim of further efforts to explicitly integrate topics of ESD and ESD as an overall principle still more into existing (as well as new) curricula" (Austria, NIR). Bulgaria indicates that all possible topics and issues applying to sustainable development are embedded in the school curricula and study content for the different classes of the compulsory primary and secondary schooling. "ESD has been embedded in the state educational requirements prescribing the acquisition of knowledge, skills, attitudes and competences in relevance to the ESD by pupils by the time they complete an educational stage and a level of education" (Bulgaria, NIR). In Germany, ESD is integrated in education standards for biology and geography, but within the national project Transfer 21 and the UNESCO Associated Schools students explore various sustainable development issues through workshops, student projects and expert talks (Germany, NIR).

In only a few cases, such as Bosnia and Herzegovina and Luxembourg, limitations were described: "Some of the sustainable development key issues are in the regular curriculum, but only as a part of the regular programme of appropriate subjects, not issues related to sustainable development. Learning outcomes are not defined by support of ESD and they are not explicitly pointed out in curriculum" (Bosnia and Herzegovina, NIR).

In Finland education for sustainable development is one of the cross-curricular themes included in the curriculum for both comprehensive education and general upper secondary education. The cross-curricular themes are principles that help to define the operational culture of schools and priorities that span the boundaries between subjects, thus helping to make teaching more unified. The national core curriculum

for basic education specifies the objectives and core content of the cross-curricular theme: "Responsibility for the environment, human wellbeing and a sustainable future" (Finland, NIR). The goal is to augment the pupil´s abilities and motivation to act for the good of the environment and human well-being. At the upper secondary school level, the aim of sustainable development is seen as being to "guarantee present and future generations full opportunities for a good life" (Finland, NIR). In addition to instruction, sustainable lifestyles are encouraged by means of an environmental programme or sustainable development programme and an environmentally aware operational culture in the upper secondary school (Finland, NIR).

Teaching /learning methods

Ninety-five percent of member States report addressing the use of pedagogical approaches that support sustainable development. While progress on ESD-supportive teaching/learning methods is underway, fewer countries have rated their efforts at the "maximum" level compared to their efforts on themes and learning outcomes (Chart 12).

Chart 12: Ratings of efforts to promote SD -- Teaching/learning methods

Legend: A (minimum), B (initial), C (moderate), D (progressing), E (advanced), F (maximum), No rating

Teaching / learning methods: 1 | 3 | 1 | 9 | 10 | 6 | (no rating)

Percentage of countries

Source: ECE NIRs, 2015.
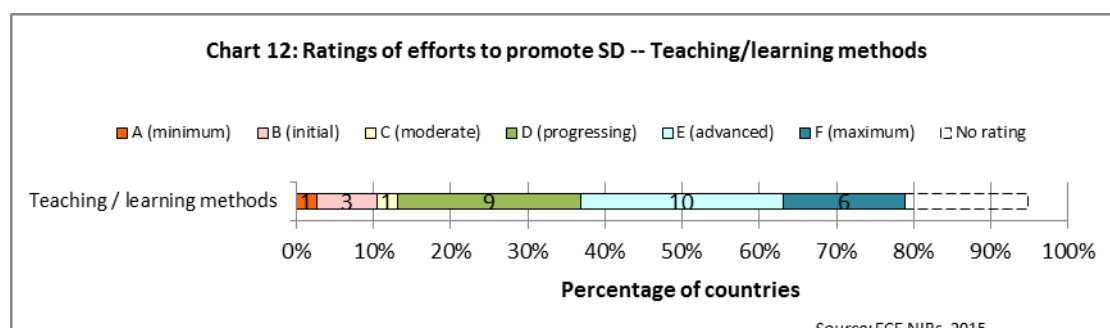
Austria reminds us that ESD must be "based on pedagogical principles such as interdisciplinary, value orientation, cultural awareness, problem-solving orientation, methodological diversity, participation and local relevance" (Austria, NIR). How member States are encouraging or directing schools and teachers to use such methods is less clear. In both Poland and Finland, schools, education institutions and teachers have autonomy regarding the learning methods they use, but examples of ESD-supportive methods are given in the curricula to guide teachers (Finland, NIR; Poland, NIR). Cyprus also notes that ESD-teaching methods are clearly indicated in the reformed curriculum at all educational levels (Cyprus, NIR). In Bosnia and Herzegovina, however, teaching methods supported by ESD are not explicitly given in the curriculum (Bosnia and Herzegovina, NIR). Organizations such as the Bavarian Academy for Nature Conservation and Landscape Management provide handbooks to schools that encourage learning about biodiversity through experiential learning and provide pedagogical training workshops (see case study 6).

Learning anchored in the local community

The UNESCO Final Report highlights the importance of grounding ESD in local-level learning:

> *ESD is grounded in local experience and actions.... Lessons from every level and area of education are reinforcing the importance and benefits of providing a local context for ESD. For example, in ECCE, in primary/secondary and in higher education we see how community engagement helps young children and students to learn about local issues and contribute to local solutions* (Buckler and Creech, 2014, p. 32).

This finding is reinforced by the lessons from the ECE third reporting cycle. Several jurisdictions affirm that flexibility in the curriculum can contribute to advancing ESD. Montenegro described how in their new curricula, "teachers themselves, pupils and schools in cooperation with the local community, can create around 20 per cent of content. The percentage of sustainable development content within new subject curricula is very high" (Montenegro, NIR). In Slovenia, this can be in response to "the needs of the local economy and environment, schools can include in their open curriculum the contents of sustainable development" (Slovenia, NIR). A critical success factor for ESD implementation in Iceland has been securing the interest and support of local schools for ESD: "The new curriculum for all school levels has been successful because the schools are ready to implement ESD at the local level" (Iceland, NIR). ESD-related programmes in member States are also helping to ground ESD at the local level. The Czech Republic's School for Sustainable Development programme is designed to support schools as initiators of sustainable development in the local community. The programme is based on the principles of locally anchored learning for students and learning for the community (see case study 5).

Whole-institution approaches

Whole-institution approaches are also considered to be a highly effective means to instill the knowledge, attitudes and choices for learners to live and work sustainably. Whole-institution approaches have been considered so promising that the ECE Steering Committee on ESD put forward the adoption of ESD school plans in every school as implementation tools for whole-institution approaches and set this as a priority action area for the third phase of implementation of the Strategy. Outcomes of efforts to promote whole-institution approaches and institute operational ESD school plans are discussed together in section 4.1.

Quality assessment for ESD in schools and learning outcomes for students

Including ESD in quality assessment for formal education would ensure both a rigorous review of how ESD is implemented and reinforce the connection between what is considered to be a quality education and ESD. As the UNESCO Final Report notes, "quality education for sustainable development is about what people learn, its relevance to today's world and global challenges and how learners develop the skills and attitudes to respond to such challenges and prosper" (Buckler and Creech, 2014, p. 21).

However, while education quality assessment or enhancement systems are reported to be in place in most member States, not all address ESD (Charts 13, 14). Still, there has been some progress. The ECE Expert Group on Indicators considered as a measure of success that ESD would be addressed in a statutory quality assessment system in at least one ISCED level: in fact, 60 per cent of reporting member States confirm that that target has been met, although approaches vary widely. In some member States, ESD is considered in mandatory school accreditation; in others, sustainable development is integrated into students' final examinations at the upper secondary level. Some member States follow the voluntary guidelines developed by the Comenius project School Development through Environmental Education (SEED) and the Environment and School Initiatives network (ENSI), published as *Quality Criteria for ESD-Schools: Guidelines to enhance the quality of Education for Sustainable Development*. Others, such as Poland, believe that ESD must become part of mandatory assessment processes, such as student examinations, to increase participation and compliance among teachers and administrators. Over half of the member States suggest that quality assessment for ESD is now addressed across the three primary and secondary levels. This is a significant advancement from 2007 and 2010, in which it was reported that few countries have quality systems that include ESD criteria (Wals and Eernstman, 2007, p. 11).

Chart 13: ESD is addressed by quality assessment/enhancement systems

Source: ECE NIRs, 2015.

Chart 14: Number of countries where education quality assessment/enhancement systems address ESD, by ISCED level

0. Early childhood education
1. Primary education
2. Lower secondary education
3. Upper secondary education
4. Post-secondary non-tertiary education
5. Short-cycle tertiary education
6. Bachelor's or equivalent level
7. Master's or equivalent level
8. Doctoral or equivalent level

Source: ECE NIRs, 2015.

ESD in non-formal and informal learning

The Strategy for ESD also takes into consideration the importance of non-formal and informal learning. Member States' responses in general acknowledge that sustainable development must be addressed in other forms of learning, and that formal education alone is not sufficient to support a transition to more sustainable societies. Most countries, like Poland, consider that ESD requires the active participation of stakeholders not only from the field of formal education but also "non-formal and informal education, as well as employers, NGOs and local communities" (Poland, NIR).

Progress on this issue is, however, unclear. Close to 90 per cent of member States report that various ESD issues, methods and instruments are available for informal and public awareness–raising activities. Support for work-based learning is also reported to be fairly strong (71 per cent) (Chart 15). In Germany, for example, there are numerous training programmes that qualify employees in diverse work contexts, such as programmes for investment consultants in sustainable investment, environmental management for company managers or organic farming for farmers. Several member States described training programmes on corporate social responsibility for corporations and small businesses. All member States were able to point to a wide range of initiatives, both government and NGO supported, such as Andorra's notes on the activities of many national agencies including the *Département Environnement du Minstère du Tourisme et de l'Environnement,* the *Centre Andorra Sostenible* (see case study 4), and the *Commission Nationale Andorrane pour l'UNESCO*, all working towards the *"sensibilization des citoyens… aux thèmes de l'eau, pollution acoustique [et] qualité de l'air"* [raising the awareness of citizens on the issues of water, noise pollution, [and] air quality] (Andorra, NIR). In Greece, the Environmental Education Centres organize seminars and workshops for public awareness. The MEDIES ESD Network in cooperation with UNESCO and other institutions developed handbooks and tools for non-formal learning and assessment for ESD, such as the handbook on methods used in EE and ESD (Greece, NIR).

However, member States' overall assessment is that ESD methods and instruments have not as yet been widely adopted for non-formal and informal learning, particularly in cases where these activities have been seen to be outside of their immediate sphere of influence and to be the responsibility of other actors such as NGOs and the private sector. Member States such as Hungary suggest that the role of non-formal and informal learning has not been emphasized as strongly in the Strategy (Hungary, NIR), and consider it important to focus more strongly on creating awareness of sustainable development across other learning communities and the general public.

Chart 15: ESD methods and instruments for non-formal and informal learning

Source: ECE NIRs, 2015.
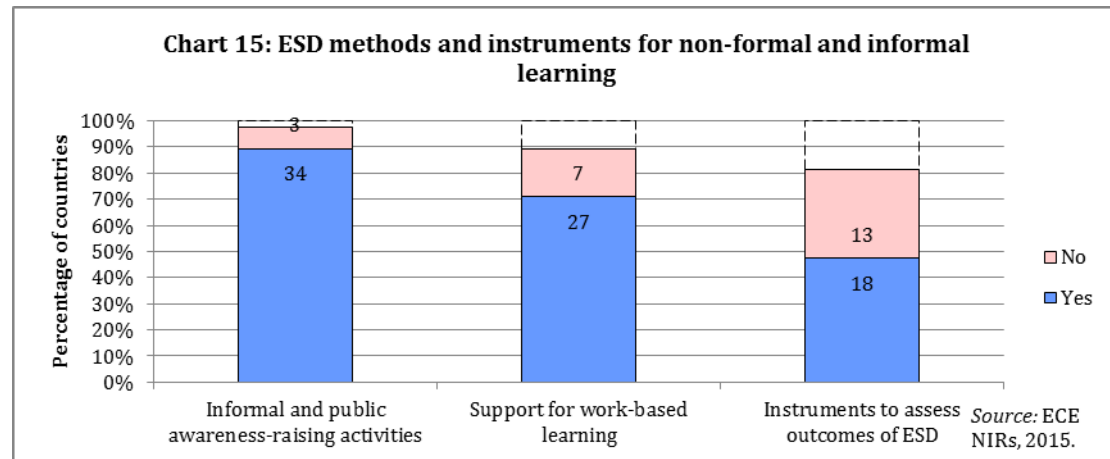
Multi-stakeholder cooperation in ESD implementation

Multi-stakeholder cooperation has long been considered essential to the promotion of ESD and was strongly encouraged in the Strategy. Member States agree, with 95 per cent reporting that ESD was implemented through a multi-stakeholder process (Charts 16, 17). Models for cooperation have included ESD councils (Manitoba [Canada]), round tables (Germany), partnership networks (Ukraine) and special focus working groups (e.g., on indicators, in Belgium). In Romania, the Ministry of National Education has developed partnerships to support the implementation of national strategies and

Chart 16: Is ESD implementation a multi-stakeholder process?

Source: ECE NIRs, 2015.

programmes with other ministries, governmental bodies and non-governmental institutions (Romania, NIR). Indeed, many, like Iceland, suggest that advancing ESD has only been possible because of the engagement and participation of a cross-section of stakeholders. Iceland undertook a systematic investigation of the role of NGOs in ESD to determine whether, and how, their work has facilitated learning for sustainability: "The main findings of the study are that life-long learning and formal, non-formal and informal education is sustained by the NGOs which prompt cooperation among people and organizations. The NGOs promote democratic behaviour and have a transformative influence on participants, including volunteers and the environment. The findings from the study also show that these two NGOs (the Red Cross in Iceland and Icelandic Church Aid) strengthen the voice of minority groups, influence authorities and promote bottom up development and learning" *(Iceland, NIR).*

Chart 17: Member States working with different stakeholder groups

Source: ECE NIRs, 2015.
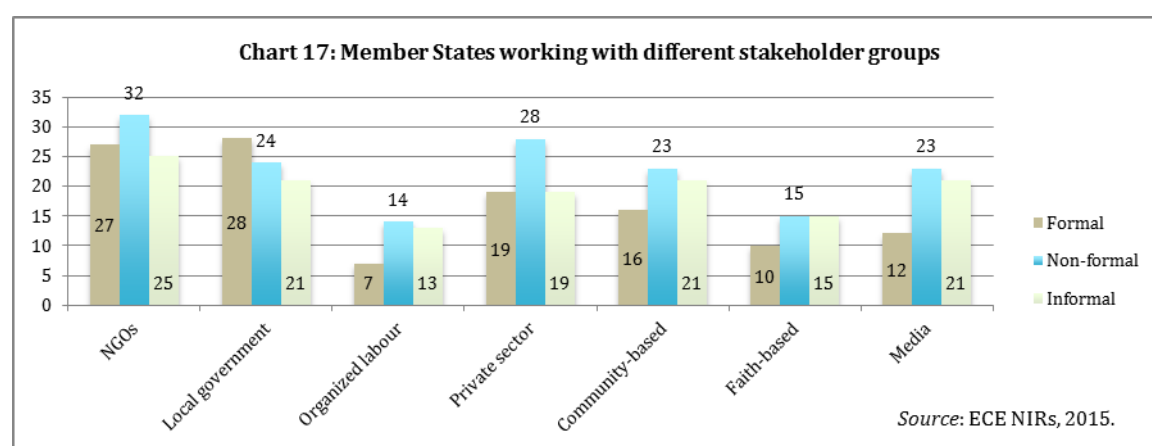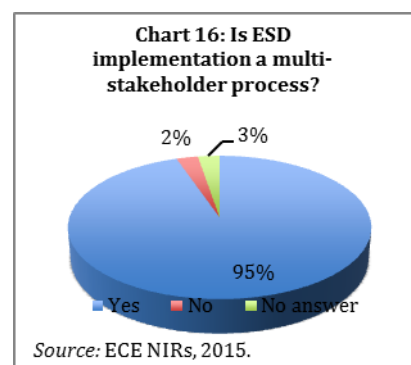
Looking forward: Opportunities for advancement on Issue 2: the promotion of sustainable development through formal, non-formal and informal learning

Increase attention to promising practices and the transfer of experience: The creation of a database of best practices on ESD would help to transfer knowledge of tools, methods and practices in order to support the development and adoption of ESD policies, instruments and curricula. Efforts might include a special focus on issues that

continue to challenge most member States, such as financing mechanisms and addressing quality in ESD curricula.

Develop means to identify, monitor and assess non-formal and informal ESD initiatives: What is most evident in the reports from member States is that, while there is a rich diversity of non-formal and informal efforts across the region, no mechanisms were in place at either national or regional levels to track and evaluate such efforts in order to review and strengthen outcomes. Standards or guidelines for those educators working in non-formal and informal contexts may be helpful.

3.3.1 Issue 2: Case studies

Case study 4: Using one centre to support ESD across all levels of learning in Andorra

Highlights
- *Centre Andorra Sostenible* has become the institution of reference for ESD in Andorra
- 50 per cent of the Andorran student population was reached through the Green School project

Background
In 2003, the Government of Andorra launched the Andorra Sustainable Center (*Centre Andorra Sostenible* or CAS), an office dedicated to raising awareness among citizens of the main environmental issues facing the country, such as waste management, water consumption, air quality and energy efficiency. In the beginning, CAS provided information services on environmental and related issues for the general population and for professionals and companies. Also, CAS proposed periodic activities (excursions, workshops), sometimes in collaboration with other entities, in order to promote good practices and actions in everyday sustainability. In subsequent years, CAS began to work with the formal educational community as well, designing pedagogic workshops and other educational activities to educate teachers and students on sustainable development.

Process
Today, CAS is an interdisciplinary institution that works to promote ESD across the whole Andorran population (ca. 70,000 people), a broad audience including the general population, students, professionals, companies and other entities, as well as tourists visiting Andorra. Environmental communication and educational aims are adapted to each target group and take the form of six key action lines:

- *Permanent educational resources*: pedagogic resources developed for schools as well as for non-formal settings.
- *Pedagogical advice and co-working on environmental projects*: open to schools and NGOs, as well as citizens who want to take action and improve sustainability. The main initiative is the Green School project.
- *Public service*: provides information and advice about environmental and sustainability issues.
- *Events calendar*: a set of activities open to all citizens to celebrate international environment events.
- *Environmental campaigns*: design and delivery of government communication campaigns to improve the country's overall sustainability.
- *Media Cooperation*: raising environmental and sustainability knowledge in press, radio and television programmes, as well as on the Internet.

Outcomes
CAS has become the institution of reference for ESD in Andorra, serving more than 7,000 people per year—about 10 per cent of the total population of the country. More specifically:

- CAS serves approximately 3,700 students each year (total number of students is approximately 10,000) with its 26 permanent educational activities including workshops, loan resources, exhibitions and visits to environmental installations.
- The Green School project currently involves 5,200 students of all ages (from 3 to 18 years), or about 50 per cent of the student population.
- Year by year, more people take action in events organized by CAS, as well as in initiatives organized

by other entities in collaboration with CAS.

- New themes have been added over the years to the sustainability topics addressed by CAS.

Despite all the actions carried out, there are many areas that must be addressed during the coming years.

Source: Andorra, case study.

Case study 5: Locally anchored learning in the Czech Republic

Highlights
- School grant support scheme leads to students investing their own skills into ESD projects
- Students know their municipality better and have increased knowledge and skills to move sustainability forward at the local level
- School relationship with the community is strengthened

Background
The Czech Republic's School for Sustainable Development programme was created in 2004 as a joint project of several non-profit organizations, including Groundwork (UK), *Partnerstwo dla Srodowiska* (Poland), and *Nadace Partnerství* (Environmental Partnership Foundation) and *Středisko ekologické výchovy SEVER* (SEVER Centre of Environmental Education) (Czech Republic). The project was initially sponsored by Toyota Europe as a part of its social responsibility strategy. The programme is based on the principles of locally anchored learning for students and the community. It is designed to support schools as initiators of sustainable development in the local community and, at the same time, to use the schools' involvement as an effective tool of ESD.

From the beginning, the programme has benefitted from an extensive exchange of experience between the schools in the Czech Republic and the Polish region of Lower Silesia. The programme has gradually expanded into other Czech regions and currently covers the whole of the Czech Republic. Between 2010 and 2013, it underwent a major update (including an expansion of the education module

for teachers) with the support of the Czech Ministry of Education.

Process
The goal of the programme is to improve the environment and quality of life in municipalities and to provide, at the same time, relevant know-how, skills and attitudes to students, teachers and other local participants through mapping, identifying and addressing community-related sustainability challenges. This is accomplished through curricular and extra-curricular project activities.

Teachers participate in a training programme that covers the basics of teaching and management, as well as community planning. This training is the cornerstone of the programme, improving the ability of teachers and their students to be aware of their community, to familiarize themselves with competencies of the school, local government and other key institutions, and to discuss sustainability issues both within the class/school and with external partners. Within relevant subjects, teachers lead their students in activities they choose jointly. The teachers who have passed the training course can subsequently make use of an e-learning programme, consultations or assistance (e.g., facilitation of planned community meetings). A manual on principles of locally anchored education called *We learn to make good decisions for the future,* a detailed methodology of the programme *(Pulling together)* and several booklets summarizing examples of the most interesting local projects have also been published under the School for Sustainable Development programme.

The community where the projects are situated may be the municipality or city quarter where the school is located, or even the neighbourhood of the school. The projects can cover a broad range of topics. These have so

far included improvements to public areas including school parks and playgrounds, construction of educational trails, activation and educational programmes for local seniors, safer ways of transporting children to schools, waste sorting practices including composting, energy saving projects and so forth. Activities can include partners in municipalities—local governments, non-profit organizations, businessmen/ entrepreneurs, and parents. An integral component of the programme that provides an incentive for participation is a grant subsidy, which schools can receive in order to implement a project.

The first of the programme's key principles is the idea of locally anchored learning. It is based on the realization that the most natural way of learning is an active participation in the life of the community in which we live. Through the implementation of a selected project, students learn how local governments and public administration work and how different activities of their municipality are planned and funded. They also learn about the history of the municipality, its cultural or natural heritage.

The second pillar of the programme is a combination of project management and community planning. Working as a team, students learn to set realistic and feasible objectives, plan their time and work, communicate with different partners, negotiate, co-decide, present arguments, or promote and garner support for their work.

The third pillar is the school grant support scheme. The educational effect of project work is much more strongly motivational if students know that that they will be able to implement, at least partially, what they themselves have devised. The projects thus are not about theoretical planning of idealistic and unfeasible visions. Through the small grant, students can realize the value of money and work, including their own skills they can invest into the project.

The greatest challenge is the programme's funding. Initially, the programme was financed by private corporate and public funds, which were sufficient for the completion and adequate verification of the programme's methodology and educational courses. Programme organizers have been somewhat successful at leveraging alternative sources of funding from central and regional public budgets—in particular, the Education for Competitiveness Operational Programme. However, there is no long-term guarantee of grant subsidies for participating schools, which is one of the important leverage points for the programme.

Another major challenge is the harmonization of the programme with day-to-day school activities. Ideally, project work should become a direct component of the common educational process to the maximum extent possible. Although the programme aims to connect project implementation and normal curricular education, it is inevitable that some of the activities have to be performed away from school and outside normal school hours. This undoubtedly brings about some difficulties with the availability and capacity of teachers to support the extra-curricular projects.

Outcomes
The most tangible outcomes of the programme include improved public areas, educational trails, community programmes and safer travel of children to school. The learning outcomes for students are equally significant: students know their municipality better and have increased knowledge and skills to move sustainability forward at a local level. For the schools themselves, cooperation between students and

teachers outside the standard education box is increased, and the school's relationship with the community is strengthened.

Source: Czech Republic, case study.

Case study 6: Experiential learning with living animals in the classroom (Georgia, Romania and Hungary)

Highlights
- Use of surrounding biodiversity and real-life experiences with living animals in the classroom
- 1000 teachers have taken the training workshops
- Students are engaged

Overview
Biodiversity provides the basics of life. There is a need to build awareness that individual behaviour is influencing biodiversity and ecosystems directly. Environmental education should therefore include real-life experiences with living animals in school classes. This will promote nature awareness and guide students to develop behaviours that are supportive of biodiversity protection and sustainable development. The ELENA (Experiential Learning and Education for Nature Awareness) project was established to support teachers as they introduce living animals into the classroom. The project (2013–2016) is led by the Bavarian Academy for Nature Conservation and Landscape Management (ANL) in Georgia, Romania and Hungary (as well as Germany). The ELENA project is funded in the amount of 400,000€ by the European Lifelong Learning Programme.

Process
Through the integration of living animals in the classroom and their use in teaching, children experience direct contact and learn how to make responsible choices for their care. Children learn also about the role of animals in their ecosystems and gain an understanding of the importance of the protection of biodiversity and the sustainable use of their surroundings.

The aim of ELENA is to prepare a compact resource kit that supports this type of experiential learning and that is easy and cost-effective to implement, fits into the curricula, and covers legal and technical details with regard to the animals' and children's welfare. Furthermore, teachers, particularly in Georgia and Romania, can benefit from the motivation that comes from working with nature and the tools to engage their students in hands-on learning.

Teachers and scientists worked together to develop the activities, ranging from short (a few minutes), simple interactions to long-term projects working with live animals. Activities have been tested and improved further by practitioners. Pupils are expected to share responsibilities for taking care of the animals and develop strategies and solutions for problems that may arise. An important aspect is building a bridge to the surrounding biodiversity by comparing the "school-animal" with the outdoor living animals, their needs and environmental requirements.

Outcomes
An action handbook covering different animal chapters and their pedagogical use was created and nearly 1000 teachers have taken the training workshops.
Source: Europe (a) (Georgia, Romania, Hungary), case study.

Case study 7: Information and communications technology–supported learning for sustainable development in Armenia

Highlights
- ICTs used in combination with field research, to support interactive learning of ESD
- Learners in the pilot project have developed an awareness of the environmental and cultural issues of Sevan Lake

Background
The design and launch of a new project on information and communications technology (ICT) by the UNESCO Associated Schools Project Network (ASPnet) was catalyzed by the International Conference on ICTs and Quality Education: UNESCO Associated Schools on the Way towards a School of the Future (Kazan, Tatarstan, April 2011). The Kazan Conference underlined the need for new partnerships between ASPnet teachers and UNESCO Chair holders, as well as between schools and private ICT companies and ICT experts. Integrating the principles, values and good practices in support of sustainable development was deemed to be particularly important. Emphasis was placed on the integration of ICT in schools and the capacity-building of teachers. In 2012, Armenia joined the resulting UNESCO/Institute for Information Technologies in Education (IITE) pilot project "Learning for the Future". Partners supporting or involved in the project are the National Commission for UNESCO of the Republic of Armenia, the Armenian Ministry of Education and Science, the UNESCO Chair on ESD, the National Center of Educational Technologies, and the Biology Faculty of Yerevan State University.

One of the main objectives of the Learning for the Future Pilot Project is to develop new educational approaches and learning materials, with the help of ICT, in support of a sustainable future. The project aims to demonstrate how to Integrate ICT into the teaching and learning processes; raise competency on environmental and sustainable development issues; develop critical thinking and support learners' participation in the decision-making process; help learners acquire capabilities to carry out scientific research work; and help them develop practical skills and values.

Process
Three Armenian UNESCO associated schools are involved in "Learning for the Future". These schools have implemented an ICT-enabled distance learning approach to learn about the most important problem for sustainable development in the Republic of Armenia—the health of Lake Sevan. Each school investigates problems relating to environmental, cultural and historical aspects of the lake. Teachers implement an interactive method of teaching that combines the distance learning components with field research, including visits to Lake Sevan and the Sevan National Park museum, as well as **water quality tests** and cleanups of the land surrounding the Hayravank monastery on the shore of Lake Sevan.

Outcomes
Learners in the pilot project have developed an awareness of the environmental and cultural issues of Sevan Lake. Representatives of participating schools as well as UNESCO Chair members have shared their findings at the IITE 2014 International Conference in Moscow, ″New challenges for Pedagogy and Education Quality: MOOCs, Clouds, Mobiles", and the fifth International Conference "UNESCO C

hairs Partnership on ICTs use in Education", 2015 in St.-Petersburg.

Source: Armenia (a), case study.

Case study 8: Non-formal learning in the tourism sector in Croatia

Highlights
- National corporate social responsibility (CSR) assessment standards for travel companies established
- More than 250 students from six educational institutions received a Travelife certificate
- Over 100 travel company employees successfully completed the training and earned certificates

Overview

Actions to advance sustainable development in the tourism sector in Croatia have been driven by public demand for greater social and environmental accountability of the tourism industry. Customers' raised awareness and higher expectations have influenced large tour operators to address sustainability across the industry. Moreover, it has become evident that the long-term survival of the tourism sector will be dependent on environmentally healthy and socially secure destinations. The core difficulty in implementing sustainability is low understanding as well as a lack of practical tools and guidelines across the tourism sector. The workforce has little to no practical knowledge of sustainability in tourism, and little effort has been made to develop education materials based on sustainability principles for the industry.

This has motivated the Association of Croatian Travel Agencies (UHPA), together with five European tourism associations from Greece, the UK, Latvia, the Netherlands, and Poland, to join efforts with the education sector to promote and implement a system for advancing sustainable development in the tourism sector. The project, "Corporate Social Responsibility (CSR) Training and Certification in the Travel Sector," aims to introduce CSR and education for sustainable tourism in the vocational and lifelong learning programmes of educational institutions. It also seeks to improve the knowledge and competence of current travel professionals working in the tour operator and travel agency sectors, as well as their supply chains. The project was financed by the European Union Lifelong Learning Programme and co-financed and supported by the Office for Cooperation with NGOs and the Ministry of Tourism of the Government of Croatia.

Process

In Croatia, project implementation involved the UHPA and its 100-plus members who acted as business sector representatives, six educational institutions who acted as educational sector representatives and the Ministry of Tourism, which acted as the supporting public institution. Central to the project is the transfer to Croatia, Greece, Poland and Latvia of an established and innovative CSR training and certification system (Travelife), which was developed by UK and Dutch tourism stakeholders.

Travelife's online platform provides educational tools, exams and a step-by-step certification process based on the practical experiences of several leading companies in Europe: "Using materials derived from actual practice helps the travel associations and educational institutions to offer training that meets the labour market needs and supports the expansion of the efforts to include sustainability into travel companies' business models" (Naut Kusters, Travelife manager).

Access to the Travelife online platform enables travel industry employees and students to start learning about sustainable tourism and CSR in tourism by using e-learning materials

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(e.g., handbook, videos, presentations, best practices brochure, interactive learning tools, self-evaluation and online test) and gaining the Travelife Sustainability Manager certificate. The certificate is recognized in the industry as valid proof of knowledge about sustainable tourism. The main challenge has been to efficiently move away from a theoretical approach to education on sustainable development toward comprehensive education that incorporates practical solutions, updates on trends, best practices examples and new knowledge.

Considerable effort, time and materials went into the improvement and adaptation process, which involved association experts, tour operators and teachers from universities and vocational schools. Existing materials were adapted to national systems of education and the business contexts of each country and then tested by the business and education sector. Subsequent feedback was used to further improve the system and materials.

UHPA and educational institutions supported tourism professionals and students in their educational process by organizing a series of free lectures and training sessions, which were all adjusted to suit the needs of every group. For example, students from vocational schools used a simplified training programme adjusted to their respective ages. Students and employees attended the same in-class training sessions and exchanged opinions and experiences. In order to further support cooperation between the business and education sectors, UHPA established a working group for sustainable tourism with representatives from the association, travel companies and educational institutions gathered to share experiences, best practices and information. This extensive process enabled participants to gain practical knowledge and skills for running tourism companies sustainably and successfully.

Outcomes
UHPA's acknowledgement of the importance of sustainability in tourism and its endorsement of the programme has been central to the programme's success: "Sustainability in tourism is the Association of Croatian Travel Agencies' prerogative and we are proud to be a link between the business and educational sectors. It is important to have a system that gathers sustainable practices of travel companies and forwards it directly to schools and students. Only by doing so can we can expect sustainability in (the) future" (Željko Trezner, director of UHPA).

In its three years of operation, the project has accomplished the following initiatives:
1. Improved and built upon existing and established training material methodologies, virtual learning environments and support tools;
2. Developed national CSR assessment standards for travel companies;
3. Pilot tested training and assessment systems with educational institutions;
4. Built local capacities and knowledge to manage, promote, implement and expand the CSR training system and standards;
5. Delivered training, assessment and certification.

The initiative has laid a foundation for the long-term continuity of ESD in the tourism sector by developing local capacity and knowledge to manage, promote and expand sustainable tourism education and training. UHPA staff and teachers are certified to train, motivate and coach the employees of the association's member companies, as well as to prepare students for applying sustainability principles in their future workplaces.

Their efforts have resulted in progress in many areas. Over 40 per cent of UHPA member travel companies registered to use the education tools, with over 100 travel company employees successfully completing the training and earning personal certificates. UHPA and its members collected and distributed 26 best practice examples among the business and educational sectors. More than 250 students from six educational institutions attended courses and received a Travelife certificate as proof of their newly acquired knowledge and skills.

Sources: Croatia, case study; Croatia, NIR.

3.4. Issue 3: Equipping educators with the competence to include sustainable development in their teaching

Educator training is the second priority of the Strategy Phase III work plan, which puts a special emphasis on the importance of this challenge. This is discussed in further detail in section 4.2, including consideration of opportunities for strengthening educator competences.

3.5. Issue 4: ESD tools and materials

There are [many] organisations and actors involved with creating ESD material.... There is [now] educational material for all ISCED levels. However, to what extent these materials are being used and implemented is difficult to assess (Sweden, NIR).

> **Success criteria**
> - ESD tools and materials are available to at least three ISCED levels;
> - A working system is in use to assure quality of ESD tools and materials;
> - At least one of the following exists:
>   - A national strategy for distribution;
>   - Public authority money invested;
>   - Approved materials available through the Internet;
>   - Register of teaching tools in the national language available through the Internet;
>   - Register of teaching tools available through other channels.

The Strategy considered both the availability and the quality of ESD teaching tools and materials to be important in the implementation of ESD across the region. Member States provided descriptions of a wide range of such tools and materials, including the following:
- student textbooks that now incorporate ESD (e.g., Bulgaria and Kyrgyzstan);
- curriculum and learning outcomes guidance materials developed for teachers by ministries of education (e.g., Estonia and Greece);
- curriculum support materials (e.g., backgrounders for teachers on sustainable development themes, project ideas, etc.) developed by NGOs (e.g., the "Green Pack" developed by the Regional Environment Centre for Central and Eastern Europe and used in classrooms in member States such as Hungary, Montenegro and Serbia);
- web portals as mechanisms to draw attention to a broad range of ESD support materials (e.g., through its Ecocampus programme, Belgium has compiled the "Wall of Inspiration", which is an online database of good practices for ESD in tertiary institutions [Belgium (a), case study], the Canadian organization Learning for a Sustainable Future has developed an online database to provide access to ESD resources, and the Netherlands has created search and retrieval tools to guide users to resources [see case study 10]);
- training materials (e.g., in Armenia a textbook on sustainable development for universities was reviewed and accepted by the four leading universities and is now also being used in training seminars for employees and members of Parliament, government ministries and agencies, and local government (Armenia [b], case study);

- public awareness materials (e.g., public information handouts on environmental issues in Slovakia).

Regional variations noted in 2011 continue to be significant in 2015. The second evaluation report observed that no or very little activity on strategies for the production and dissemination of ESD materials was being undertaken in the Eastern Europe, the Caucasus and Central Asia region; and today, the percentage of member States with production strategies and mechanisms remains low at only 17 per cent (Chart 18). Only one of the South-Eastern Europe member States reports the existence of such strategies. However, there are improvements across all regions in strategies/mechanisms to disseminate ESD materials: half of the European Union, other Western European countries and North America member States now have dissemination strategies/mechanisms compared to 42 per cent in 2010; and a third of Eastern Europe, the Caucasus and Central Asia member States and 50 per cent of the South-Eastern Europe member States also now have strategies/dissemination mechanisms. Furthermore, 71 per cent of all member States now have materials available through the Internet (Eastern Europe, the Caucasus and Central Asia: 67 per cent; European Union, other Western European and North America member States: 75 per cent; South-Eastern Europe member States: 50 per cent) (Chart 19).

Chart 18: Existence of national strategies/mechanisms to encourage the development and production of ESD materials and tools

Source: ECE NIRs, 2015.

Chart 19: Accessibility of ESD teaching tools and materials, by region

Source: ECE NIRs, 2015.
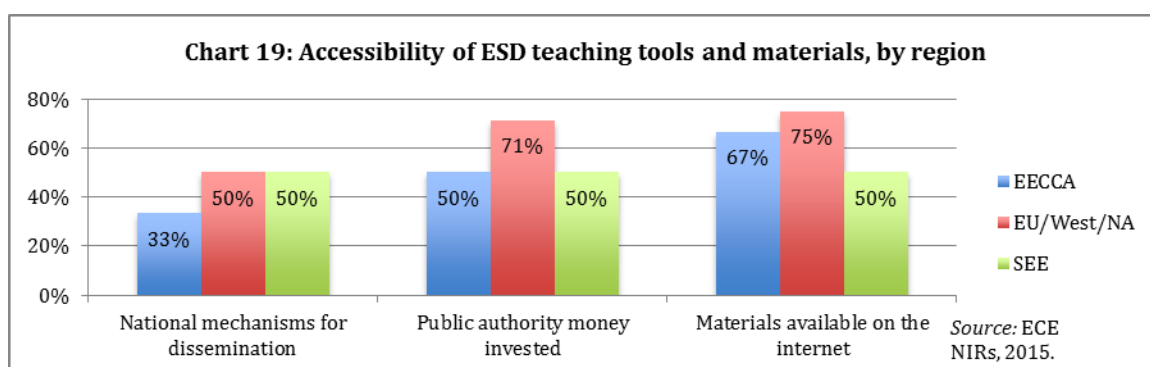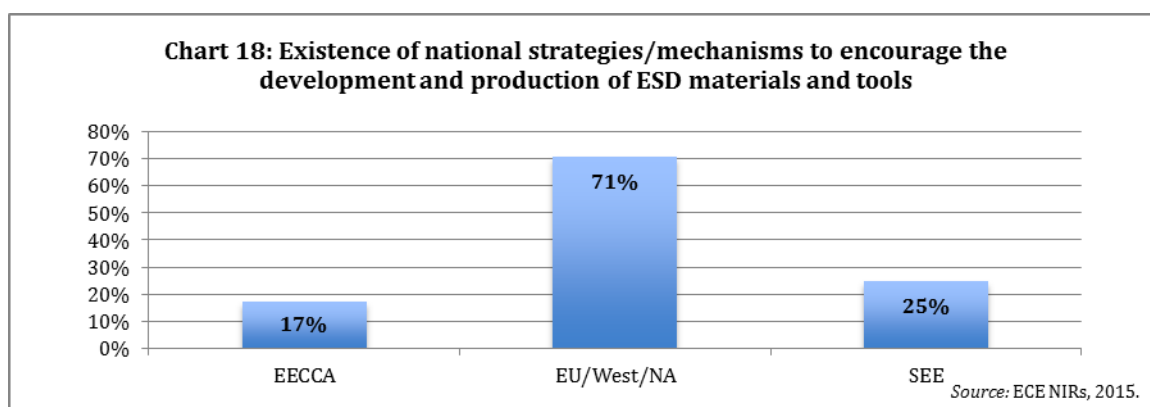
While, like Cyprus, many member States report the existence of national strategies, institutions and mechanisms to produce and make available ESD-related materials, particularly for primary, lower and upper secondary levels (ISCED levels 1–3) (Chart 20), fewer have given attention to quality criteria and approval of those materials (Chart 21). In most cases, teaching materials that relate to ESD are subject to the same comprehensive quality criteria as all other education materials used in public education. Other member States indicate that general strategies on quality criteria and

guidelines (for ESD materials) do not exist (Austria, NIR). At the present time, targeted efforts to address quality in ESD materials are ad hoc and often led by NGOs and academic institutions rather than the curriculum developers in ministries of education. Kyrgyzstan provides a rare example of the introduction of quality standards for textbooks that meet not only education requirements but serve the requirements of the country's National Strategy for Sustainable Development (Kyrgyzstan, NIR).

Chart 20: Number of member States with ESD teaching tools/materials, by ISCED level

0. Early childhood education
1. Primary education
2. Lower secondary education
3. Upper secondary education
4. Post-secondary non-tertiary education
5. Short-cycle tertiary education
6. Bachelor's or equivalent level
7. Master's or equivalent level
8. Doctoral or equivalent level

Source: ECE NIRs, 2015.

Chart 21: Do you have quality criteria and/or quality guidelines for ESD-related teaching tools and materials?

Source: ECE NIRs, 2015.

Switzerland and Cyprus both highlight the value of having a central institution involved in the development and distribution of ESD tools and materials. In Cyprus, the Cyprus Pedagogical Institute has established groups of experienced teachers, inspectors, counsellors, and scientists on ESD who are recruited on an annual basis to produce educational material on sustainable development issues that are a priority for Cyprus and the Mediterranean region (Cyprus, NIR). The new Swiss foundation *éducation21* has been designed to act as a national service centre, providing teachers, school boards and other involved parties with pedagogically tested teaching materials, information and advice, as well as financial support for school and class projects (see case study 9).

Central websites or portals, often managed by government departments, also provide a useful centralizing service for ESD educators seeking to find resources in a timely manner that will support or supplement curricula set by Ministries of Education. Denmark's Ministry of Education manages the website www.emu.dk for Danish educators. Latvia's National Centre for Education provides web access for ESD teaching tools and other approved materials. Ireland plans to create a similar mechanism for the central dissemination and sharing of resources.

In some member States, ESD resources and materials are generally inaccessible. Resources developed by NGOs and other institutions are often project-based and only distributed through an institution's project website. No central portal exists to provide easier access to what potentially could be thousands of kits, lesson and project plans and interpretative materials.

Looking forward: Opportunities for advancing issue 4: the development and accessibility of ESD resources

Provide greater assurances on the quality and utility of ESD resources: Member States such as Switzerland and the Netherlands note that, while the production of ESD teaching material is considerable, the demand for it may be in question and the quality will vary widely. Where ESD has not been mandated or integrated across the curriculum, the concern is that only a few educators will make use of the material. In the future production of ESD teaching tools and materials, needs assessments should be considered together with guidelines for quality.

Review the concept and practice of open access for ESD resources: Several member States, such as the Czech Republic, Denmark, and Poland, have pointed out that open access policies are strongly influencing the production and provision of access to ESD materials. As Denmark describes, a free market for teaching materials is part of the overall education economy (Denmark, NIR). Public access to ESD resources needs to be guaranteed, and support for the development of such resources should include requirements for open access. Following the examples of member States such as Cyprus, Poland and Slovenia, it is good practice to make all ESD material available free of charge. In Poland, material is often available through the Creative Commons licence (Poland, NIR).

3.5.1 Issue 4: Case studies

Case study 9: éducation21—the national one-stop shop for ESD in Switzerland

Highlights
- Switzerland established a permanent supporting institution on ESD serving the education system
- ESD is being substantiated, promoted and diffused across the country

Background

The foundation *éducation21* was created in 2012 in a joint action of the Federal State, cantonal authorities and the Swiss National Centre for ESD.[7] *éducation21* supports Swiss educators as they integrate and implement ESD beyond the UN DESD. It was established from the merger of the foundations for global education and for environmental education, based on their mutual understanding of ESD as an umbrella concept that includes global education, environmental education, health education, civic education including human rights education, and economic education.

A contractual framework with the Federal State guarantees the funds for its basic mission for 2015–2018. Funds are also generated through service agreements and independent organizations.

Forty-three (mostly part-time) staff support *éducation21*, in Berne, Lausanne and Bellinzona, providing services in German, French and Italian.

Overview

éducation21 is mandated by the Swiss Conference of Cantonal Ministers of Education (EDK) and six federal offices with responsibilities for issues such as vocational/professional education, development and cooperation, environment, public health, food safety and spatial development. As a result, the thematic diversity of sustainable development is widely represented. A broad offering of services, ranging from concrete teaching material and media to systemic development support and expertise, is available. The foundation cooperates closely with teacher education institutions, providing them advice, networking support, events and ESD training units. Schools and other education providers can apply for grants for school projects on chosen ESD thematic issues. *éducation21* also supports research and development of the concept of ESD and is active as a transfer point between theory and practice.

One major initiative of *éducation21* is its support for the development of the existing network of 1,700 health-promoting schools, which is now being extended to encompass all facets of ESD and encourage more schools to participate, using a whole-school approach. *éducation21* has also launched a project that is intended to build up a network of partners in the area of vocational/professional education.

Outcomes

By giving ESD its own structure and focal point, and by working in cooperation with many partners, ESD is being substantiated, promoted and diffused across the country.

There is still much work to do. For example, more work is needed to increase acceptance of ESD as a pedagogically based concept. In general, awareness of and access to ESD should be improved.

Sources: Switzerland, case study.

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[7] As a multilingual Federal State, responsibility in Switzerland for compulsory education lies primarily with the 26 cantons. In post-compulsory education, the cantons and the federal authorities each have their own responsibilities.

Common to many efforts to address ESD tools and resources is the desire to connect 'supply and demand', enhance the use of good practices and disseminate quality materials. Two initiatives present different, but effective, approaches to this challenge.

Highlights
- Resources 4 Rethinking (R4R) is successfully contributing to the advancement of ESD in Canadian classrooms
- In a three-year period, the Dutch ICT platform GroenGelinkt is connecting more than 600 organizations and approximately 10,000 online search requests are processed each month.

Netherlands: Search, find and act with GroenGelinkt

Background
In the Netherlands, there are hundreds of organizations that have ESD-related campaigns, lesson plans, and activities, but the information is not always easy to find and search engines do not provide information about the quality and suitability of resources for a specific age group or grade level. The Dutch ICT platform GroenGelinkt improves access to ESD activities, venues and learning materials.

Process
GroenGelinkt is a search tool and a nation-wide information platform through which organizations can make their ESD products widely available. Open source search tools link websites, allowing greater visibility and access to collections of ESD materials and activities. Quality assurance is possible through expert evaluations, user reviews and feedback.

Outcomes
Co-creation, demand-driven development, tailor-made solutions and strong public-private cooperation are key to GroenGelinkt's success. GroenGelinkt is connecting more than 600 organizations, over 3000 materials and thousands of activities. Annual use has doubled, with approximately 10,000 queries per month. Next steps will be to broaden target audiences to business and industry involved in creating sustainability-related learning materials for vocational education.

Canada: Resources 4 Rethinking—Bringing ESD to the classroom

Background
Quality resources for teachers wanting to explore sustainable development with their students have been hard to come by in Canada. R4R was created to fill this gap and encourage teachers and students to explore sustainable development themes and concepts in their classrooms.

Process
Through Learning for a Sustainable Future, a team of 26 teachers representing different provinces, grade levels and subject areas across Canada reached consensus on the key elements of an "exemplary ESD resource". ESD and pedagogical criteria were then used to evaluate resources for inclusion in R4R, which is a searchable online database that connects K–12 teachers to classroom-ready ESD resources that have been reviewed by experienced educators and matched specifically to relevant curriculum outcomes in all provinces and territories in Canada.

More than 1,200 classroom-ready resources are available on R4R that explore the environmental, social and economic dimensions of the important issues in our world today through

active, interdisciplinary learning. The database provides access to over 440 French materials and 760 English materials, the majority of which can be downloaded immediately for free.

Outcomes

More than 300,000 individuals from 200 countries have visited R4R, with annual increases in the number of sessions, new visits and returning users. The database covers more than 1,200 lesson plans, videos and books for children and young adults. A 2015 user survey documents high to very high satisfaction rates from teachers at all grade levels. Several provincial ministries of education have recognized R4R as an effective tool for ESD learners and are directing their teachers to it. A number of teacher-training programmes have also embraced R4R, as well as several publishers that are now submitting materials for review. Next steps include further marketing to increase awareness of R4R among Canada's 400,000 teachers.

Sources: Netherlands, case study; Canada, case study.

3.6. Issue 5: Promote research on and development of ESD

Research provides essential feedback for innovation in the ESD field—it provides the opportunity to embed practical results into educational theories and thus make them part of educational practice in the long term (Czech, NIR).

Support for the promotion of ESD research in the Strategy's third phase of implementation (Charts 22, 23) remains the same, as reported in the second evaluation cycle at just under 70 per cent (Eernstman and Wals, 2011, p. 16). Challenges in advancing ESD research are more evident in countries of Eastern Europe, the Caucasus and Central Asia and South-Eastern Europe, with only 50 per cent of the member States in those sub-regions reporting support for research, compared with 75 per cent of the States in the European Union, other Western European countries and North America group (Chart 24).

Chart 22: Research that addresses content and methods for ESD is supported

Source: ECE NIRs, 2015.

Chart 23: Dissemination of research results on ESD is promoted

Source: ECE NIRs, 2015.

Chart 24: ESD research is supported, by region

Region	Percentage
EECCA	50%
EU/West/NA	75%
SEE	50%

Source: ECE NIRs, 2015.
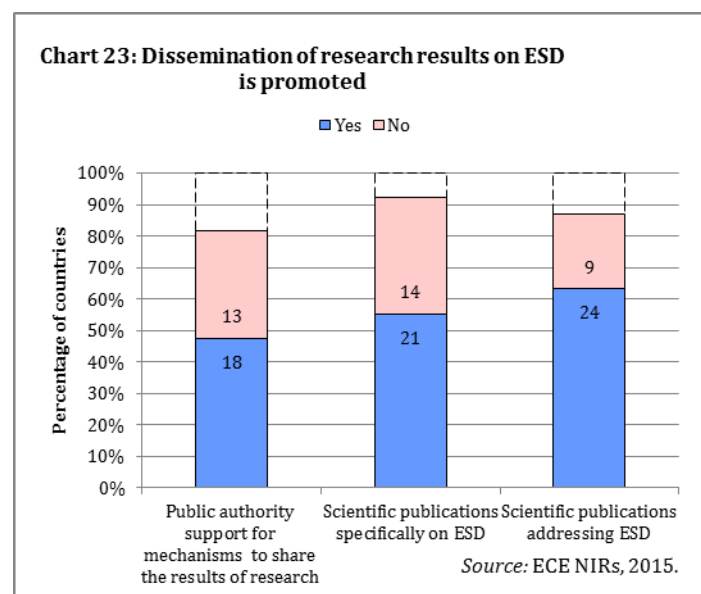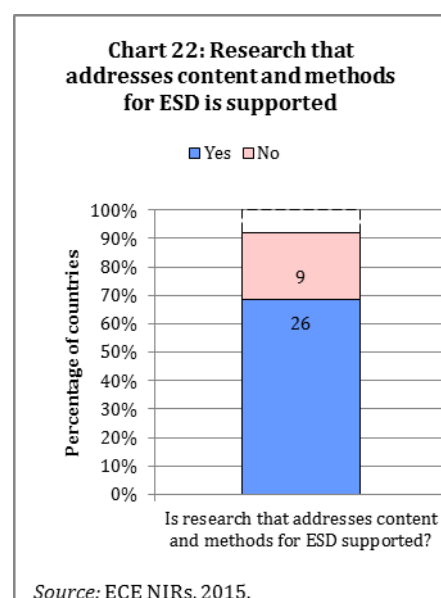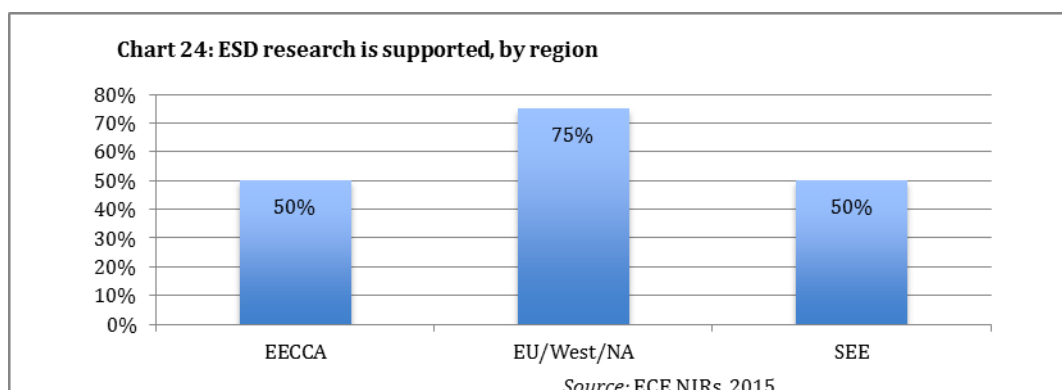
In 2015, at least 20 of the reporting member States made reference to published peer-reviewed research and related online resources being disseminated by researchers from those countries. This suggests at the very least that many government departments responsible for ESD are aware of and have access to ESD research. Several, such as Iceland and Slovenia, point to the ways that research is being used to guide ESD policy and practice.

In 2007, a group of university professors in Iceland initiated ActionESD, a research and school development project to analyze the possibilities for integrating sustainability across the curriculum. The school development work was noticed by the Ministry of Education and, in 2009, the Ministry appointed a number of focus groups to work on how fundamental pillars, including sustainability, would appear in the curriculum guides. ActionESD representatives participated in the focus groups and their work influenced the rewriting of two government policies. ActionESD's sustainability curriculum analysis key was written into the 2010 edition of *Welfare for the Future* and the *2011 National Curriculum Guide.*

Slovenia has likewise used research to inform practice. In order to strengthen approaches to ESD in Slovenia, research was commissioned into ESD practices in other countries to learn which didactic approaches and methods of teaching/learning for sustainable development were the most often employed and which topics were frequently covered. The findings were incorporated into Slovenia's methods and techniques for ESD.

It is also fair to say that most member States recognize the need for more research on ESD and the need for monitoring, assessment and evaluation of ESD actions and learning outcomes. In Latvia, relevant statistics on ESD implementation at different levels of education are needed; in the Czech Republic, the academic community is not well versed in the current state of knowledge of ESD; in the Netherlands and Malta, there are many initiatives but very little reflection and evaluation of outcomes. As Germany proposes, ESD research needs to link up better with existing education and sustainable-development research; a systematic evaluation of learning outcomes regarding ESD should be considered (Germany, NIR).

Success criteria for ESD research in the Strategy tended to focus primarily on broad issues, such as whether research was being undertaken, whether incentives for research were in place (e.g., financial support for research projects or support for post-

graduate studies) and whether research was being shared. Member States were not asked so explicitly about the areas or themes of research, making it more challenging to present a full picture of the status of ESD research across the ECE, including gaps.

Individual comments provided by member States suggest that, at present, areas of research include analysis of educational goals supporting sustainability, processes for reorienting education systems, development of active learning methods, and evaluation of the outcomes and effectiveness of ESD. Highlights from member States' responses to the NIR include the following:

On educational goals
- Belgium researchers have published their core exploration of education as a response to sustainability issues.
- Hungarian researchers have connected the role of education in the development of environmental awareness.

On reorienting education systems
- Greece points to how the research work of its Institute for Educational Policy (IEP) has led to new curricula and training programmes for teachers and administrators.
- In Romania, the Institute of Education Sciences is analyzing the compatibility of ESD methods with education policies.
- The Ukraine points to gender analysis research on the concept and strategy of ESD implementation.

On development of active learning methods
- Armenia describes its national research programme "Teaching Ecological Problems, Implementing New Educational Technologies", where teachers are working with new technologies to present environmental issues (e.g., climate change, ecology, etc.) to enable learners to gain new knowledge, form special abilities and skills and carry out research at a global level (Armenia, NIR).

- In Switzerland, the sd-universities programme is promoting projects that apply innovative teaching and models, testing how they might strengthen competences for SD, such as reflexive, multi-perspective and practical reasoning.

On evaluation of the outcomes and effectiveness of ESD
- Among many research activities, Austria points to funding provided for the development of an indicator set to evaluate ESD.
- Norway highlights how the evaluation of the natural backpack programme has informed teacher competences and curriculum development.
- Poland's University of Warsaw Centre for Environment Studies and Sustainable Development is researching indicators for ESD.

As Denmark observes, however, there is no designated database tracking ESD research either regionally or at the member State level. Germany is one of the few countries to have conducted a comprehensive review of ESD research, its deficits and

potential (Germany, NIR). Ireland intends to conduct a similar audit as part of its National Strategy on ESD.

Many member States refer to the importance of the UNESCO ESD Chairs to ESD research, as well as the roles that the Regional Centres of Expertise on ESD are playing at the national and regional level. Regional cooperation on research has served to strengthen ESD practices at the member State level. Bosnia and Herzegovina points to the importance of participating in the Regional Centre of Expertise's (REC) research into ESD in the Western Balkans, which was titled "Competences of school management to run sustainable schools". This participation has helped Bosnia and Herzegovina to improve school ESD planning through the development of training modules and mentoring opportunities for school administrators and staff (Bosnia and Herzegovina, NIR). Montenegro's Bureau of Education has worked with REC to investigate the knowledge, attitudes and behaviours of primary school pupils on sustainable development and how to address these through the curricula (Montenegro, NIR).

Emerging networks of researchers are also gaining recognition. In Canada, the Sustainability Education Policy Network (SEPN) is a partnership between Canadian and international researchers and leading Canadian and North American policy and educational organizations. SEPN's collaborative approach to research examines the relationships between sustainability education policies and practices in early childhood to grade 12 education and post-secondary education, with the goal of enabling educational change for a more sustainable future (Canada, NIR).

Under Issue 5 on ESD research, the Expert Group on Indicators determined that post-graduate ESD programmes are an essential enabling condition for improving the culture and practice of ESD research. Member States were therefore asked whether such programmes exist and whether incentives such as scholarships were in place. In 2015, over half of member States reported that ESD-related master's and doctoral programmes are now available, but the number of States reporting scholarships supported by public authorities remains low (Charts 25, 26). However, more specific data was not collected from all reporting States on the types of courses – whether studies and research lead to a post-graduate degree in ESD or whether they connect ESD to specific themes (such as Ph.D. courses on biodiversity and ESD). This has created a timing issue, which Malta has flagged: "Because ESD's importance in the curriculum has just been recently acknowledged, the development and dissemination of ESD research has been sporadic and very often dependent on the initiative of academic staff at Malta's University Centre for Environmental Education and Research (CEER)" (Malta, NIR).

The Czech Republic has identified two significant barriers to advancing ESD research at the tertiary level that are rooted in the nature of ESD itself: first, ESD is interdisciplinary, but the evaluation panels at the grant agencies require researchers to submit disciplinary-oriented projects; and, second, ESD is a multi-stakeholder endeavour, often with NGOs in lead roles, but lacking the academic credentials and channels to access research granting agencies. There are also systemic challenges to developing an ESD research capacity, particularly in countries such as the Kyrgyz Republic, where the overall research culture and teaching staff capacity may be limited.

Chart 25: Are post-graduate programmes available?

■ Yes □ No
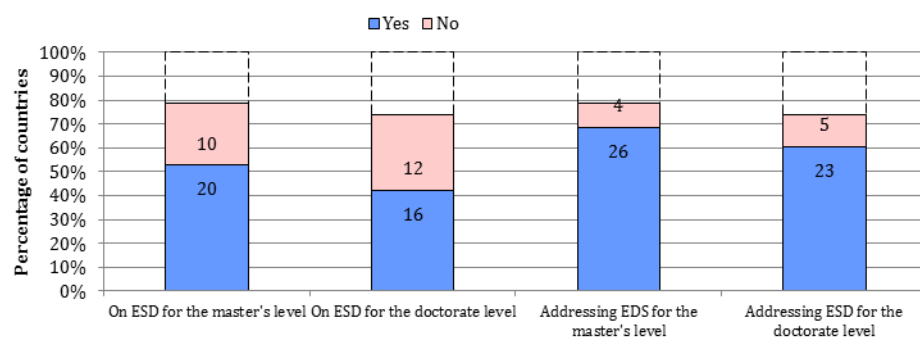
Source: ECE NIRs, 2015.

Chart 26: Are there any scholarships supported by public authorities for post-graduate research in ESD?

■ Yes □ No

Source: ECE NIRs, 2015.

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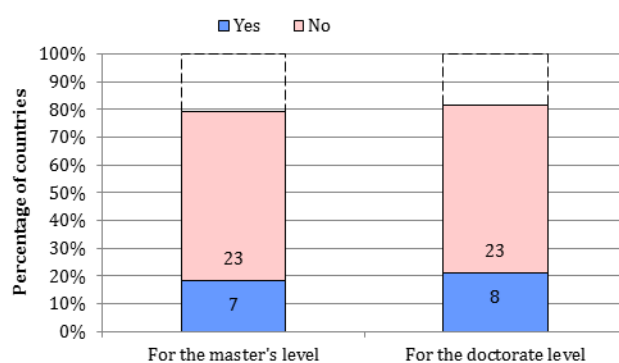
Looking forward on issue 5: ESD research

Urge grant-makers to recognize ESD: Engagement of decision-makers in grant-making agencies may help to advance the recognition of ESD as a legitimate avenue of inquiry, including recognition for the interdisciplinary and multi-stakeholder nature of ESD and the involvement of non-academic actors in research. Ireland, for example, explicitly recommends in its National Strategy on ESD that future calls for research funded by the Department of Education and Skills will include ESD as one of the priorities (Ireland, NIR).

Strengthen networked and collaborative approaches to ESD research: Joint research initiatives should be stimulated across higher education institutions and include non-academic ESD actors:

"(t)he outcomes and results of such research and development projects may lead to a stronger systemic perspective and impact for the whole education system" (Switzerland, NIR).

Consider how research can be translated into practice: There is a need for an efficient interface between research and the field of education and awareness-raising, with attention given to having expert knowledge translated into practically oriented knowledge for educators, policy-makers and other social actors.

3.6.1 Issue 5: Case studies

Case study 11: Thematic learning networks in Belgium and their role in ESD research and development

Highlights
- co-creation of ESD research, materials and initiatives through networks
- learning networks are fostering a community of ESD practitioners in different academic disciplines and across all tertiary education in Flanders

Overview
Belgium's experience in ESD research and development suggests that learning networks that include both academic researchers and practitioners can bridge the gap between ESD theory and practice. The role of networks in advancing ESD research, development and practice is an important pillar of Belgium's Ecocampus programme. Ecocampus aims to catalyze universities and colleges towards recognizing their role and responsibility in contributing to the sustainable development of people and the planet. One of the Ecocampus initiatives is the organization of learning networks for different disciplines. These networks meet regularly (2–4 times a year) to exchange research, experience and know-how to advance ESD teaching practices and to work on specific outcomes. Currently, four learning networks are running for those active in economic studies, social work, tourism and teacher training. The programme targets teachers, students and researchers and aims to inspire, support and connect them across the boundaries between institutions, disciplines and professions. This results in the co-creation of research, materials and initiatives that range from theoretical frameworks `and` hands-on manuals to conferences and workshops to exchange platforms and a database of best practices.

Process
A learning network's session typically gathers 20 participants. Each network is supported by an Ecocampus staff person who invests four days per session for facilitation. This includes preparation, the one-day session itself and follow-up. About €1,000 is budgeted to support each network for speakers, venue and catering.

The hands-on approach of the meetings allows participants to engage, add value to the exchange of knowledge and co-create shared products, such as a didactic presentation, a publication, and so forth, which can then be used in their individual ESD practice. This co-creation process has an impact that extends beyond the specific outcome: during learning network sessions, seeds are often planted for new research, collaboration and initiatives that arguably will influence the longer-term development of ESD beyond the network itself.

Keeping a critical mass of participants motivated to continue attending network sessions is a challenge. Consideration is being given to moving the learning networks from meetings to online platforms, but it is unclear whether this will increase the impact and number of participants or decrease the number of valuable face-to-face exchanges.

Outcomes
New tools will advance ESD in specific disciplines, such as the EDO-competences profile, which was co-created within the learning network on teacher training. It provides the reader with an overview of competences for teachers to implement ESD in the classroom. More significant perhaps than the individual products, the learning

networks are helping to foster a community of ESD practitioners in different academic disciplines across tertiary education institutions in Flanders. This is an important step in mainstreaming ESD in less evident disciplines where ambassadors of ESD can find themselves isolated.

Source: Belgium (b), case study**.**

3.7. Issue 6: Strengthen cooperation on ESD at all levels within the ECE region

The close cooperation of the Central Asian countries promotes DESD in the region (Kyrgyz, NIR).

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Success criteria

At least one example is given of international cooperation on ESD.

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Across the ECE region, the ECE ESD secretariat has played a central role in promoting ESD among member States and maintaining the focus on the Strategy over the original 10-year implementation period. The Steering Committee on ESD has kept member States engaged and accountable, championed research into key issues such as ESD indicators and teacher competences, provided essential guidance to member States in the implementation of the three Phase III priority areas, and fostered the sharing of information and lessons learned among member States.

Many of the reporting countries described the strengthening of cooperation on ESD beyond their own borders, within the ECE region and in other ECE regions (Chart 27). While not all public authorities were able to contribute directly to international networks themselves, some were well aware of the efforts of the educational institutions in their countries and encouraged them to continue. Regional variations are significant here, with only 50 per cent of member States in the Eastern Europe, the Caucasus and Central Asia region and 25 per cent of member States in the South-Eastern Europe region reporting public cooperation in and support for networks within the ECE region. Government involvement in the promotion of ESD in international forums outside the ECE region is in general lower across all member States.

Other regional forums and agreements across the ECE region have also proven to be important arenas for advancing ESD interests. The Organization for Economic Cooperation and Development Annual Meeting of Sustainable Development Experts now has ESD as one of its central focuses; the Benelux Union (Belgium, the Netherlands and Luxembourg) has established an environmental education/ESD working group; ESD is assuming a central focus in the Nordic Sustainable Development Strategy of the Nordic Council of Ministers; and ministers of environment of the Union for the Mediterranean have provided an important endorsement of the Mediterranean Strategy on ESD. However, both Latvia and the Netherlands observe that a concrete agenda on ESD from the European Union may be missing (Netherlands, NIR). In November 2010, at the Education, Youth, Culture and Sport Council meeting in Brussels, 27 ministers of education invited European Union member States and the European Commission "within the limits of their respective competencies to support ESD and promote these council conclusions" (Council of the European Union, 2010). Lack of awareness of this recommendation, or stronger European Union member State commitments to it, may be limiting the response from the European Commission.

The nature and purpose of regional cooperation has ranged from the exchange of expertise and sharing of lessons learned to financial support for research and implementation projects. Legislation and frameworks have been reviewed through cooperative efforts, teaching and curriculum support materials have

been developed, capacities of teachers and trainers have been strengthened through workshops and exchanges, and good practice guidelines have been compiled.

Much of the regional cooperation on ESD policy and practice takes place through networks involving ESD policy-makers and practitioners, such as the Regional Network on ESD, which unites partners from Belgium, France, Germany and Luxembourg, and the programme of the Regional Environment Centre for Central and Eastern Europe "ESD in the Western Balkans". International initiatives, such as the nomination of Regional Centres of Expertise, have also supported the exchange of knowledge and expertise within the region.

Higher education networks are helping to advance ESD within the higher education sector in the region, with common objectives to mainstream environment and sustainability practices, curricula and learning, and sustainable development research. Many member States acknowledged the work of the Copernicus Alliance (a network of 55 post-secondary institutions in 33 countries), the Baltic University Programme (a network of about 225 universities and other institutes of higher learning throughout the Baltic Sea region), the Network of the Mediterranean Universities for Sustainable Development, the University Educators for Sustainable Development (a consortium of higher education institutions, organizations, agencies and associations gathered around four regions across Europe) and the Global Universities Partnership on Environment and Sustainability. Networking by UNESCO ESD-affiliated Chairs has also been influential.

The networking of schools is also an important facet of cooperation across the region, providing mechanisms for students themselves to exchange views and learn from each other. Member States pointed to the importance of the Baltic Sea Region Schools Network, the International Schools Network of the Global Learning and Observations to Benefit the Environment (GLOBE) programme, the UNESCO Associated Schools Project Network and the Foundation for Environmental Education's Eco-Schools.

Chart 27: Regional and international cooperation, by region

Source: ECE NIRs, 2015.

Looking forward on issue 6: regional and international cooperation
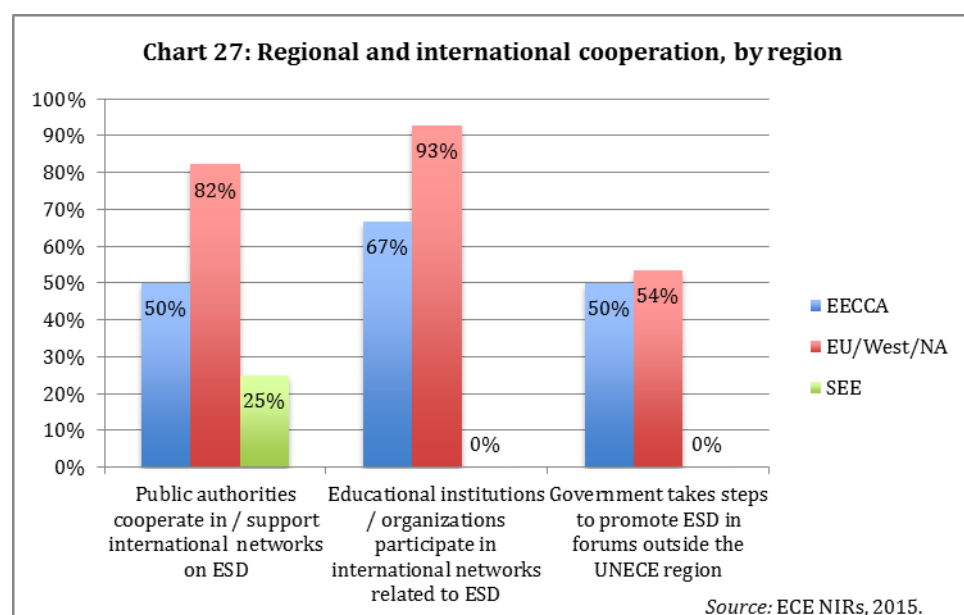
Increase networking opportunities and the sharing of knowledge across the region: Many member States suggest that there is a need for strengthening regional and international connections further through the provision and financing of more opportunities to meet. Such networking opportunities would help to increase access to knowledge and the sharing of experience. With only 50 per cent of member States in the Eastern Europe, the Caucasus and Central Asia region and 25 per cent of member States in the South-Eastern Europe region reporting public cooperation in and support for networks, it is evident that more attention should be given to supporting governments in networking opportunities. Member States such as the Kyrgyz Republic and Slovenia note in particular the challenges that government representatives can face in securing funds for regional travel. As Malta suggests, "national governmental representation in major international ESD conferences is necessary to contribute to the international ESD debate and to facilitate national implementation at policy making fora and grassroots levels" (Malta, NIR). In addition to increasing networking events, Ukraine suggests that it would be helpful for the ECE process to have its own database and mailing list on the activities that are carried out in other countries on ESD, and possibly for the secretariat to be assigned responsibility for the dissemination of information on activities of ESD in the ECE region (Ukraine, NIR).

3.7.1. Issue 6: Case studies

Case study 12: Regional cooperation on ESD across the Western Balkans

Highlights
- 40,000 teachers and over 4.5 million students in 19 countries, including the Western Balkans, have been educated using Green Pack materials.

Overview
In 2012, the Hungary-based Regional Environmental Center for Central and Eastern Europe (REC) launched a five-year programme (2012–2016) called Education for Sustainable Development in the Western Balkans: Education for Sustainable Futures. Its goal is to develop a culture of ESD in the western Balkan countries of Kosovo, Serbia and Montenegro and to use the leverage of the European integration process currently underway in those countries to integrate SD concepts and ideas into broader educational reforms and the shift towards outcomes-based learning. The programme's total budget over five years is €1.4 million, with financial support from the Rockefeller Brothers Fund, Europe Aid and the Ministry of Education, Science, and Technology of Kosovo.

Process
Through research into the strengths and weaknesses of the national curricula in each country, gaps were identified and guidance provided on how to reform and align the national educational curricula with the principles of sustainable development. Once the revised curriculum policy was in place in each country, didactical materials were developed to support the new curriculum frameworks, together with training to assist teachers in delivering the curriculum and

sustainable development concepts. Regional conferences between the three countries were conducted to share key results and brainstorm on next steps and future needs.

In the target countries, there are comprehensive changes underway to educational systems as they shift to an outcomes-based learning approach that is being widely adopted across the European Union. This provides a window of opportunity to include ESD in the reform process. There are also large pre-accession funding mechanisms, such as Europe Aid, to assist these countries in the shift to this new system of learning. The drive towards European integration is making these countries more open to education policy reforms than they might otherwise be.

Also significant has been the development and adaptation of REC's *Green Pack* and *Green Pack Junior*— multimedia educational kits for teachers and their students—as a core didactical resource to support the new curriculum in each country. According to surveys among teachers in Hungary, where it was first introduced, *Green Pack* takes into full consideration a national curriculum and adapts the content to it. Teachers of all subjects are able to find references to sustainability that can be included in their own lesson plans, with country-specific examples. Since the *Green Pack* launch in 2001, around 40,000 teachers and over 4.5 million students in 19 countries, including the Western Balkans, have been educated using these materials.

One of the main challenges has been the ever-changing political landscape. As elections occur, work within the Ministries is put on hold until a new cabinet is in place. In addition, as governments change, the political

mandates of the previous government are no longer valid, so new relations and understandings must be rebuilt. To mitigate the impact of such changes, REC developed relationships with high-level technical experts who often remain in place through government transitions. The full five-year time frame of the programme also allows sufficient time both to foster relationships with government officials and to wait for political momentum to shift towards ESD policy reform.

Outcomes

Kosovo

Cross-curricular sustainable development topics, including climate change, biodiversity, green economy, and technology, media and society, have been developed for official integration into the school curriculum. Experts from the Ministry of Education, Science and Technology (MEST) have developed learning outcomes for each subject field in a new draft curriculum. MEST has provided direct financial support to train teachers on how to make ESD learning outcomes an integral part of their teaching. It has also prepared a manual for teachers on how to implement the new learning outcomes, supported *Green Pack* training sessions and developed content for *Green Pack Junior*. In total, 1,000 copies of *Green Pack* have been printed, reaching approximately 240,000 students, 700 copies of *Green Pack Junior* printed, and 30 ESD training workshops organized for over 870 teachers. A committee on ESD has also been established, comprising officials from the Ministries of Education, Health, and Environment, and the Association of Kosovan Municipalities and the NGO community in order to promote a culture of ESD.

Montenegro

Inter-subject themes and topics related to sustainable development, elaborated by the expert working group and REC experts, have been officially approved by the National Bureau of Education and made part of the primary school curriculum. Sustainable development–related cross-cutting themes and topics have also been officially approved by the National Bureau of Education for pre-schools and high schools, and for general education subjects in vocational schools. Teachers are now obliged to cover climate change, green economy, human rights, environmental protection, sustainable cities and communities, biodiversity, and environment and health in their lessons. Seven hundred copies of *Green Pack Junior Montenegro* have been printed and *Green Pack Junior Online* has been developed, reaching around 42,000 students. Thirty training workshops for teachers and two presentations of *Green Pack* for directors of primary schools have been held, with the participation of 1,000 teachers (10 per cent of all teachers) and 50 directors (30 per cent of all directors of primary schools). Experiences have been shared among expert working groups from the three countries.

Serbia

In partnership with a Serbian educational project funded by EuropeAid, Serbia has reformed its national curriculum framework through the integration of SD learning outcomes into each subject for primary, secondary, and vocational schools. A teacher-training module on ESD has been developed for 10 per cent of primary and secondary schools in Serbia. Environmental protection criteria have been officially included among indicators for assessing the performance of educational

institutions; sustainable development principles have been officially incorporated into indicators for assessing teachers' professional development; and the concept of environmental responsibility has been integrated into the official school curriculum. A manual on new teaching and learning methods has been developed, and *Good Practices on ESD Implementation in the New Serbian Curriculum Framework* is now available online. *Green Pack* has been upgraded in line with Serbian educational standards and 1,000 copies have been produced, reaching approximately 240,000 students. An ESD training module was developed and delivered in 41 pilot schools, involving 2,600 teachers; 7,500 teachers participated in online training, covering 10 per cent of the schools in Serbia.

Sources: Western Balkans, case study; Montenegro, NIR; Hungary, NIR.

Case study 13: The Mediterranean Strategy on ESD

Highlights
- The Mediterranean Strategy on ESD is a direct outcome of the UNECE Strategy on ESD
- Demonstrates that the UNECE Strategy for ESD has had an impact beyond its direct borders into other countries in the Mediterranean region

Overview
The countries of the Mediterranean region currently face many environmental, economic and socio-political pressures, compounded by the massive population migration arriving from areas of conflict. The current challenges for the countries are to a

large extent unprecedented. In dealing with these challenges, countries need to consider a range of immediate measures to facilitate the movement and settlement of hundreds of thousands of people, but also the long-term measures and investments needed to ensure a safe, peaceful region that can develop sustainably. Education is one such long-term investment in human resources: an education that can enhance the ability of learners to think, work and act together for the identification of innovative solutions and their own fulfillment. In other words, a long-term solution to the current challenges facing the Mediterranean region is education that targets sustainability.

In the framework of *Horizon 2020* (the European Union's programme for research and innovation), the Croatian Ministry of Environmental and Nature Protection, in cooperation with the Mediterranean Information Office for Environment, Culture and Sustainable Development and the University of Athens, organized a regional workshop called "Strengthening Education for Sustainable Development policies in the Mediterranean" (Zagreb, June 2013). The main objective was to build the capacities of officials from Ministries of Environment and Ministries of Education in Mediterranean countries towards strengthening and promoting policies for ESD.

The final draft of the Mediterranean Strategy for Education for Sustainable Development (MSESD) was reviewed at this meeting and subsequently formally endorsed in 2014 in Athens by the Environment Ministers of the Union for the Mediterranean (UfM). The MSESD is an important contribution from the Mediterranean region to the post-UN DESD phase and

is considered an outcome of the UNECE Strategy for ESD. MSESD has been developed through a lengthy and wide participatory process involving environment and education government officials, academics, international experts and NGOs from the north and south of the Mediterranean. It has had strong political and moral support by distinguished personalities such as H.S.H. Prince Albert of Monaco and has been supported by the UNESCO Chair and Network on Sustainable Development Management and Education in the Mediterranean, held by the University of Athens. Secretarial support for the development of the Mediterranean Strategy has been provided the Mediterranean Education Initiative for Environment and Sustainability (MEdIES). Funds have been provided through several sources, including the Directorate-General for Environment of the European Commission, Horizon 2020/Mediterranean Environment Programme, and private donors.

Process

The MSESD serves as a flexible framework to encourage countries to incorporate ESD into their formal, non-formal and informal educational systems. Its implementation is driven by national priorities and initiatives focusing on each country's specific needs and circumstances (see www.medies.net/_ uploaded_files/publications/msesd%20 booklet.pdf).

The Mediterranean Strategy has the following specific objectives:

- Ensure that policy, legislation and other regulatory and operational frameworks support ESD;
- Promote sustainable development through formal, non-formal and informal learning;
- Equip educators with the competences that enable them to integrate sustainable development in their teaching;
- Ensure that adequate tools and materials for ESD are accessible;
- Promote research on and development of ESD;
- Strengthen cooperation on ESD at all levels within the Mediterranean region.

Although the Mediterranean Strategy is aimed at governments, motivating and advising them on how to develop policies and practices that incorporate sustainable development into education and learning, it recommends that this be done through interdepartmental, multi-stakeholder cooperation and partnerships. In this way, the Strategy will also stimulate investment of material and human resources into ESD. In this context, the Strategy may be useful to any agency or individual that is engaged with education of any type (formal, non-formal, informal) and at any level (primary, secondary, tertiary or lifelong).

The Mediterranean Strategy is fully compatible with the ECE Strategy for ESD and therefore its philosophy and implementation does not present any inconsistencies to the countries that have already adopted the latter. Therefore, other interested countries in the region are welcome to endorse it.

The Secretariat of the Union for the Mediterranean, with scientific and technical support from MEdIES, will facilitate the Strategy's promotion, implementation and monitoring.

The immediate next step is the development of a five-year Action Plan

for the promotion of Mediterranean-wide regional and sub-regional activities on ESD and capacity-building activities at the national level, taking into account on the one hand UNESCO's Global Action Programme on ESD and, on the other, the priorities of the Mediterranean countries and in particular the aspirations of youth, who have been consulted through a regional online survey in 2015.

The implementation of the Strategy at the regional level will be financed by voluntary contributions from States, intergovernmental organizations and other public or private sources with an interest in education. The Strategy will also be an integral part of the revised Mediterranean Strategy for Sustainable Development (MSSD II), currently being reviewed by the United Nations Environment Programme Mediterranean Action Plan under the framework of the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention).

Outcomes
The Mediterranean Strategy is a major contribution from the Mediterranean as a follow-up to the UN DESD and in line with the new global Sustainable Development Goals. It is proposed as a flagship "advancing policy" initiative of the Global Action Programme of UNESCO that seeks to scale up global ESD action. Its evolution is clear evidence of the important role of the Strategy for ESD in inspiring ESD supporting policies, and it demonstrates how the Strategy for ESD has had an impact beyond its direct borders into other countries in the Mediterranean region.

Sources: Mediterranean region, case study; Croatia, NIR; Greece, NIR

Case study 14: Developing education for sustainable development competences in Europe

Overview

The University Educators for Sustainable Development (UE4SD) project seeks to reorient teaching and learning in higher education by improving support for university educators to develop professional competences in ESD. Despite interest in ESD, its approaches to learning and education are not yet in common practice in the higher education sector. There is evidence that to bring in ESD approaches to re-orient the curriculum, there needs to be more professional guidance for staff who teach and who support learning in higher education. There are still large "translation gaps" in applying ESD ideas in different subjects and courses so that the learning process can contribute to a sustainable future.

The project is funded by the European Commission under the Life Long Learning Programme—Erasmus Academic Networks. It commenced in October 2013 and involves 53 partners (mostly higher education institutions) in 33 European countries over its three-year implementation period. The UE4SD Partnership is a consortium organized into four hubs of partner institutions in their region: North, West, East and South Europe. The UE4SD Steering Group involves staff members from the four institutions that lead the regional Partnership Hubs: University of Gloucestershire, UK (Project Lead and North region); Leuphana University of Lüneburg, Germany (West region); Charles University in Prague, Czech Republic (East region); and, Autonomous University of Madrid, Spain (South region).

Process

UE4SD draws upon the ECE ESD Competence Framework published in 2011, which provides a valuable framework for educators to develop their capabilities to integrate ESD into curriculum design and pedagogy. The core aim of UE4SD is to establish an expert group in ESD competences in higher education in Europe, and to share the expertise of its partners, to inform policy and practice during and beyond the life of the project.

The partners have been organized into four regional hubs to facilitate coordination and communication, and to ensure that regional scenarios and contexts are visible. A key challenge has been to manage the large partnership and ensure that expectations from partners are being met: communication and engagement is an ongoing challenge in this type of complex project and requires regular review of strategies to maximize the participation of members and the benefits for them.

The project includes three implementation stages with core activities and outputs:

Stage 1: Reviewing the 'state of the art' and identifying leading practice (2013–14): National mapping exercises were conducted by 53 partner institutions with four regional reports prepared and a State of the Art report analyzing the findings. Existing policy developments and strategic commitments for ESD in higher education were identified, together with best practice examples. Findings indicate that ESD has gained importance in higher education across Europe, and a growing number of

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universities have formal commitments to ESD as part of their corporate sustainability activities; however, there is a need for clearer focus on professional competences in ESD.

Stage 2: Developing new resources and guidance tools (2014–15): Key project resources include a leading practice publication (conceptual framework and case studies) and an online platform (examples, reflections, ideas and tools) to bring ESD into education practice and professional development for university educators.

*Stage 3: **Developing an Academy for ESD in Higher Education (2015–16): The final UE4SD stage consists of framing a** professional development programme to support university educators to develop their own ESD competences. The Academy is currently being trialed with four higher education institutions in Spain that are identifying processes and creating projects focused on improving the professional development of teaching staff in ESD. Mentoring and action learning are key processes underpinning this activity, which seeks to generate impact for university teams and support wider institutional change towards ESD after the end of the project.

Outcomes
UE4SD uses a distinctive monitoring and evaluation (M&E) approach. A member of the Steering Group leads the internal evaluation, monitors the quality of the project and collects the M&E data during the life of the project. An external evaluator reviews the data and makes an assessment of progress in the annual and final M&E reports. The first project M&E report acknowledges that the UE4SD platform has contributed to enhance partners' knowledge and competences

in ESD and influenced key international and national dialogues in ESD in higher education. Moving forward, the report recommends developing new participatory processes to engage both internal and external stakeholders in project activities.

UE4SD is a unique collaborative effort that helps those involved in education and learning develop the future-facing, globally conscious, transformative capabilities the 21st century requires— and to bring these approaches into their teaching practices, to assist students in developing these competences. Its innovative resources include practical examples and reflections on team-based action learning initiatives, incentivized professional support schemes, linked research-teaching processes, institutional development programmes, integrative academic training modules and networking and capacity-building activities. These tools can be easily used and adapted by different education organizations across the world.

Source: Europe (b), case study.

Case study 15: Carpathian Regional ESD Network— cooperation to strengthen ESD

Highlights
- Support for this initiative has been reflected in the Carpathian Convention of the Parties (COP)
- Exchanges on ESD are being strengthened at a regional level

Overview
The Carpathian region constitutes a major ecological, economic, cultural, recreational and living environment in the heart of Europe, shared by numerous people and countries, where sustainable development should be a priority. The Carpathian countries (the Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia, and the Ukraine) have committed to the sustainable development of the region by becoming parties to the Framework Convention on the Protection and Sustainable Development of the Carpathians (the Carpathian Convention), which was adopted in Kyiv in May 2003. The focal points of the convention are representatives of the Ministries of Environment of the Carpathian Countries. The UNEP Office in Vienna has provided the secretariat to the Carpathian Convention (SCC) since 2004.

The Convention acknowledges the importance, in Article 11, of "Cultural heritage and traditional knowledge" and in Article 13, "Awareness raising, education and public participation". The secretariat has coordinated several ESD-related activities in past years, including the following: the Move4Nature initiative on teacher training, which provides a tool kit and training for teachers in rural mountain regions; a project on vocational training of rural tourism stakeholders in community-based sustainable tourism development and promotion, using ICT, with pilot sites in Austria, Italy, Poland, Romania and Ukraine (*Innovation in Rural Tourism);* and support for higher education and research through the Science for the Carpathians initiative, which is a regional science network on mountain research in the Carpathian Mountains.

In order to strengthen activities in ESD, the ECE secretariat, with approval of its parties, initiated cooperation with the ECE Steering Committee on ESD and, in particular, with the Focal Points and observers from the Carpathian Countries by inviting them to join the Carpathian Regional ESD Network (the Network).

The goal of the initiative is to support coordination of ESD-related activities in the Carpathian countries and cooperation among ESD stakeholders at various levels, from the Focal Points of the Convention through to multiple partners on the policy, academic and practical levels. Another aim of the Network is to support transferability of good practices among the Carpathian countries, as well as development of further activities, rendering them most useful for implementing countries' ESD strategies.

Process
The leaders, participants and contributors to the initiative include the SCC at UNEP Vienna, the ECE Steering Committee for ESD, the Focal Points of the Carpathian Convention, observers of the Carpathian Convention activities and the ECE Steering Committee members from the Carpathian countries, The Science for the Carpathians Initiative, the Regional Centre of Expertise in ESD (RCE Vienna) and NGOs working on various

aspects of the Carpathian Convention related to Articles 11 and 13, on cultural heritage and traditional knowledge, and awareness-raising, education and public participation. Engagement of the highest levels of stakeholders is challenging, however, as nominated Focal Points can change and the ability of Carpathian countries to attend meetings of the ECE Steering Committee on ESD can vary.

So far the resources used have been those from the ESD-related activities of the UNEP Vienna SCC and its partners, including funding from the European Commission and a private donation. In addition, the initiative is relying on already existing meetings, such as the meetings of the Carpathian Convention Implementation Committees, the Conferences of the Parties, as well as the meetings of the ECE Steering Committee on ESD to discuss activities of the network. Finding resources for joint projects and initiatives constitutes a challenge, which can nevertheless be overcome as a result of cooperation among the Network members.

Outcomes
The Carpathian Regional ESD Network is already seeing synergies created among international organizations and existing and complimentary policy processes. Cooperation on ESD is being encouraged among the ministerial Focal Points, and exchanges on ESD are being strengthened at a regional level. For example, at the ninth ECE Steering Committee meeting in 2014, UNEP Vienna SCC, with support from the ECE secretariat, organized an informal meeting with the participating Carpathian Focal Points from Ukraine and Poland to discuss cooperation on ESD in the Carpathian region. Further, the initiative has been presented and

discussed by the Carpathian Convention parties at the fourth Conference of the Parties (COP) of the Carpathian Convention on 23–26 September 2014. Support for the initiative has been reflected in the COP decisions.

At the 10th ECE Steering Committee meeting on ESD (June 2015), participants from Czech Republic, Hungary, Poland, Slovakia and Ukraine affirmed their interest to become part of the Network and cooperate with the Carpathian Convention Focal Points, as well as to use the occasions of the following Steering Committee meetings to coordinate Carpathian activities.

It has been decided that the first activity of the Network will be the production of a report on ESD in the Carpathians, which will serve as the basis for further joint activities. While working on the report, the cooperative efforts have already supported the process of designation of the Focal Points from Hungary and Romania to the ECE SC on ESD.

Source: Carpathian region, case study.

3.8. Issue 7: Foster conservation, use and promotion of knowledge of indigenous peoples, as well as local and traditional knowledge, in ESD

The curriculum for the 10-year compulsory school in Norway considers the specific need for the Sami people. The Directorate for Integration plays an essential role in promoting knowledge of Norway's indigenous people in ESD (Norway, NIR).

> **Success criteria**
>
> Evidence shows that the role of indigenous peoples' knowledge is recognized in ESD.

While the success criterion for this issue emphasizes the importance of indigenous knowledge, the issue identified by the Expert Group on indicators includes the promotion of local and traditional knowledge held within member States and their communities. Out of the 38 reporting States, 22 gave some consideration to not only indigenous but also local and traditional knowledge in ESD. Those member States with indigenous populations commented on two facets of the issue: first, efforts to recognize and include indigenous perspectives across the curriculum; and, second, the need to strengthen education and ESD for indigenous populations as a necessary component of sustainable development. As Canada observes, "there remains a significant gap in including First Nations/indigenous peoples in ESD/environmental education across Canada" (Canada, NIR). Other countries such as Romania, Croatia, Hungary and Poland shared common observations on the promotion of local and traditional knowledge and skills in the curricula, classroom and community.

Many of the European countries promote local traditions and cultures within ESD. In Poland, an example of this has been the Ecomuseum Network—a project conducted by the Polish Environmental Partnership Foundation. An Ecomuseum seeks to draw attention to the authenticity of a place through natural and cultural resources and related community activities aimed at joint action, including promotion, education and regional development. This initiative is based on local knowledge and intimate connection to the region, drawing out the history and traditions in order to assure both heritage protection and economic benefits for local people (Poland, NIR). Romania, Croatia, Hungary and Poland shared common observations about the principles and practices in their respective education systems on conservation and promotion of local and traditional knowledge and skills.

Looking forward on issue 7: raising the profile of indigenous, local and traditional knowledge and culture in ESD

Strengthen the understanding of indigenous, local and traditional knowledge in ESD: Member States with indigenous populations should be encouraged to share research and collaborate to raise the profile of indigenous knowledge in ESD. The outcomes of this collaboration would serve not only to strengthen the understanding of indigenous knowledge in their own countries, but would inform countries without indigenous populations of the global value of such knowledge.

More broadly, the transfer and use of local and traditional knowledge in ESD should be further explored—in particular, the knowledge and traditions of local communities

and how those might enhance understanding of sustainability in the school curriculum.

Consider broadening the scope of this issue to include addressing multicultural perspectives in the classroom: Of particular note were responses from some member States that touched on the impact of immigration and the growing awareness of the importance of the knowledge and traditions of other cultures. As Malta states, "The heavy influx of immigrants is adding a new dimension to the promotion of indigenous knowledge. ESD initiatives need to address different ethnicities. Although some examples of good practice are available, this area is still in need of development" (Malta, NIR).

3.8.1. Issue 7: Case studies

Highlights
- 200 individuals from over 20 countries have been officially trained
- World Network of Biosphere Reserves are ESD "motivators"

Overview
One of the fundamental challenges in teaching learners about sustainable development is to provide real-life examples of the balance among environmental protection, social cohesion and economic viability, in which full consideration is given to local, traditional and indigenous knowledge. In Greece, training programmes and tools have been developed to demonstrate these linkages using the Biosphere Reserves of the Man and the Biosphere Programme of UNESCO.

Biosphere Reserves are areas of protected and sustainably managed terrestrial, marine and coastal ecosystems. Each reserve promotes solutions reconciling the conservation of biodiversity with its sustainable use. The knowledge and values of the local inhabitants living in or near the sites are considered in the management of the reserves through the system of "differentiated intensity". A reserve can consist of a "core zone" of biodiversity protection, one or more "buffer zones" and a "transitional zone" where livelihood and social activities could be integrated, provided that sustainable development provisions are observed. The

relationship with the local society and economy must be analyzed and considered in setting those provisions. Key to securing local and traditional knowledge is an open, participatory planning process with the local community.

Process
Formal and non-formal educators look for on-the-ground examples where communities live in cooperation with their environment. The goal of the Greece initiative has been to help educators utilize local Biosphere Reserves as open laboratories demonstrating the process of considering local knowledge and needs in managing ecosystems. In 2008, the Mediterranean Education Initiative for Environment and Sustainability and the University of Athens produced initial educational resources on Biosphere Reserves; by 2012 the material had been enriched with regional cases, field-tested by ESD practitioners and evaluated by international experts in a series of consultations and workshops. Funding was secured through projects supported by the Greek Ministry of Education, UNESCO, the European Union and private donors. The resulting resource guidebook has been the main teaching resource used in a series of face-to-face training sessions, a summer school and an e-learning course with multiple audiences including ESD formal and non-formal educators, NGO staff, university students and the Biosphere Reserve managers themselves.

Outcomes
Since 2008 more than 200 individuals from over 20 countries (mostly Mediterranean) have been officially trained (receiving certificates and/or credits), while the number of people who have accessed the resource publication exceeds 1,000. The initiative showcases a concrete tool for

educators on holistic, integrated, community-based approaches to the environment, drawing on local and traditional knowledge. It has contributed to the recognition of the use of the World Network of Biosphere Reserves as ESD "motivators".

Source: Greece, case study.

4.   PHASE III PRIORITIES

In 2012, at the 7th Steering Committee meeting of the Strategy for ESD, member States agreed to focus on three leverage points for advancing ESD:

1. to ensure that there is an ESD school plan in every school by 2015;
2. to promote the introduction of ESD into teacher education; and
3. to reorient technical and vocational education and training (TVET) in support of sustainable development and the transition to a green economy (UNECE Steering Committee on ESD, 2013).
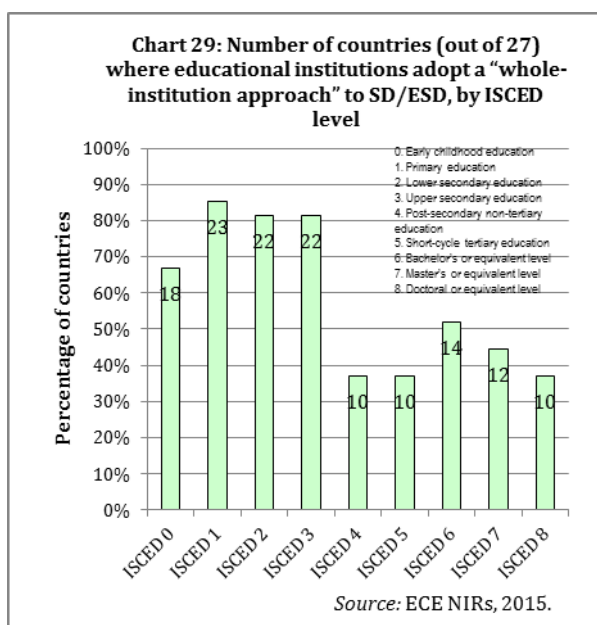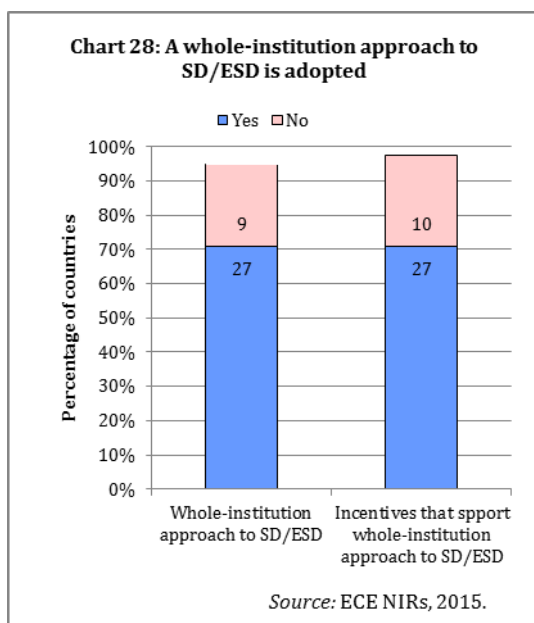
Small working groups were established for each of the priority action areas to provide greater clarity on underlying concepts, as well as opportunities and potential challenges that member States might face in working towards these specific goals. In addition to contributing to the expert group process, 32 member States contributed at least one informal report on progress on Phase III priorities for 2012 (TVET only), 2013 and 2014 (all three priorities), with 23 member States submitting detailed updates in 2014.

4.1. Priority 1: Whole-institution approaches and ESD school plans

> *The National ESD strategies (2006) set the target that all schools should draw up a SD plan by the end of 2010. According to the independent evaluation conducted in 2012 of the national ESD strategies it is evident that the goal was not achieved but significant progress has been made (Finland, NIR).*

Whole-institution approaches

Whole-institution approaches involve the learners, the institution and the community working together to embed sustainability in curriculum, learning approaches, facilities, operations and community interaction. The Expert Group on Indicators set the criteria for success as "at least one national programme to support the implementation of a whole-institution approach" (UNECE, 2009*b*, p. 82) by the end of the 10-year time frame. In 2007, less than 30 per cent of those States that submitted a national implementation report on ESD indicated that they had adopted whole-institution approaches in their countries (Wals and Eernstman, 2007). In 2010, the number had more than doubled ─ 63 per cent of all countries participating in the reporting process stated that they were adopting whole-institution approaches to implement ESD (Eernstman and Wals, 2011). Today, nearly three-quarters (71 per cent) of reporting member States indicate that not only are whole-institution approaches adopted, but incentives are being provided to encourage and support their adoption. Although there are encouraging signs of whole-institution approaches at tertiary levels (Charts 28, 29), whole-institution approaches are being adopted more often at the primary and secondary levels, with nearly half of member States also including whole-institution approaches at the ECCE level. For example, in Belgium, the Milieuzorg Op School (Environmental Performance at School) Project works with nurseries as well as primary and secondary schools to achieve their ambition of permanently embedding environmental performance in their school culture (Belgium [d], case study).

Chart 28: A whole-institution approach to SD/ESD is adopted

■ Yes   □ No

Percentage of countries

- Whole-institution approach to SD/ESD: Yes 27, No 9
- Incentives that spport whole-institution approach to SD/ESD: Yes 27, No 10

Source: ECE NIRs, 2015.

Chart 29: Number of countries (out of 27) where educational institutions adopt a "whole-institution approach" to SD/ESD, by ISCED level

0. Early childhood education
1. Primary education
2. Lower secondary education
3. Upper secondary education
4. Post-secondary non-tertiary education
5. Short-cycle tertiary education
6. Bachelor's or equivalent level
7. Master's or equivalent level
8. Doctoral or equivalent level

Percentage of countries

- ISCED 0: 18
- ISCED 1: 23
- ISCED 2: 22
- ISCED 3: 22
- ISCED 4: 10
- ISCED 5: 10
- ISCED 6: 14
- ISCED 7: 12
- ISCED 8: 10

Source: ECE NIRs, 2015.

Member States report a range of efforts, with many referring to international programmes, such as the Global Learning and Observations to Benefit the Environment (GLOBE) and Eco-Schools, that have encouraged participation from individual schools and students. Home-grown recognition programmes have also been influential, such as Austria's National Environmental Performance Award for Schools, Canada's Learning for a Sustainable Future national ESD innovation awards and, at the provincial level, Manitoba's ECO-Globe recognition for individual schools. Such initiatives start a dialogue for schools seeking to attain a high level of sustainability performance across their whole school (Canada, NIR). In a few cases, such as the Kyrgyzstan Republic, public funding for schools and teachers is directly tied to "stimulating funds", distributed among teachers for a demonstrated improvement in the quality of their work. "One of the indicators to obtain these funds is the development/participation, together with the students in different types of projects, programmes, and training and the use of results in the classroom on various

issues, including on environmental issues and sustainable development" (Kyrgyzstan, NIR).

This trend towards the promotion and adoption of whole-institution approaches to ESD is strongest in the European Union, other Western European countries and North America group and South-Eastern Europe regions (75 per cent of reporting States), but currently only half of the Eastern Europe, the Caucasus and Central Asia States report progress on this issue (Chart 30).

Chart 30: Adoption of whole-institution approaches, by region

Source: ECE NIRs, 2015.
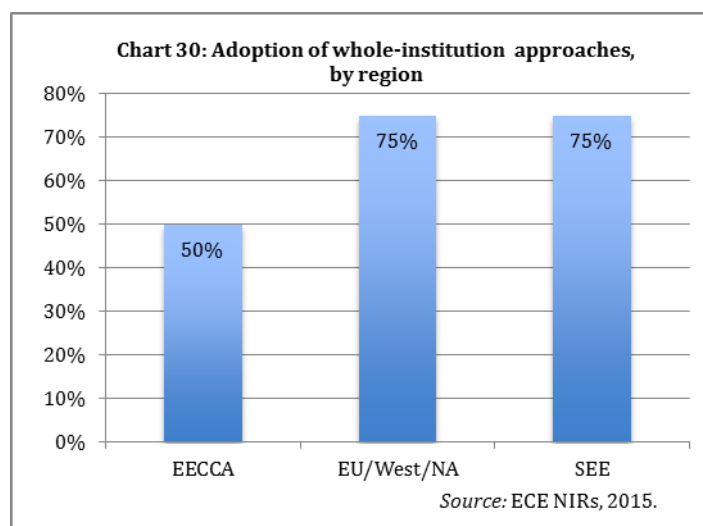
While in most member States, higher education institutions have considerable autonomy, many now consider sustainable development "as a wide-ranging issue covering all of their activities and they have their own action plans, programmes as well as quality systems" (Finland, NIR). In Canada, a major driver for whole-institution approaches at higher education institutions has been the Sustainability Tracking, Assessment and Reporting System of the American Association for Sustainability in Higher Education. Other countries apply principles of environmental management systems (e.g., International Organization for Standardization [ISO] standard 14001) or sign on to mechanisms such as the Sustainable Campus Charter, which was developed by the International Sustainable Campus Network and the Global University Leaders Forum.

Organizations in member States are also now working to develop tools and resources to support ESD in teaching and learning at HEIs, such as the guidebook *Sustainable development as a compass for defining learning outcomes*, which was compiled by the Belgium EcoCampus programme. Ecocampus recognized that there has not yet been much thought given to how sustainable development can be integrated in discipline- and programme-specific learning outcomes. The guidebook presents a good theoretical background to sustainable development, ESD, competences for sustainable development and reasons why sustainable development is implemented in tertiary education, together with ways to embark on the integration of competences for SD in learning outcomes and illustrated with relevant good practices (Belgium [c], case study).

ESD school plans

Member States have learned that whole-institution approaches embed ESD where the learner is and change the culture of the school and the surrounding community. School plans are seen to be the instruments for implementing the "whole-institution approach" in school operations, particularly in pre-primary, primary and secondary levels of education. As defined by the ECE ESD working group on school plans, "ESD school planning is a means to move beyond sustainability awareness-raising and to actively engage in a continuous cycle of planning, implementing and reviewing approaches to sustainability as part of every school's operations" (UNECE, 2014*b*). The working group identified a number of core dimensions for such plans, including school governance arrangements, curriculum, teaching and learning, facilities and operations, partnerships and cooperation—particularly with the surrounding community—and self-assessment.

Member States have taken different approaches to addressing this priority. Many continue to focus primarily on sustainable development across the curriculum and how it is rolled out at individual school levels, together with learning resources (primarily online) to support teachers. Several countries such as Armenia, Croatia, Estonia, Greece, Monaco and the Ukraine point to the success of introducing special projects into the curriculum and schools that encourage students and teachers to consider sustainability challenges within the local community—learning in a more integrative, interactive and participatory manner. Linking curricula and learning with facilities and operations is often achieved through participation in international programmes such as Eco-Schools and the UNESCO Associated Schools Programme. Several States have also introduced their own national programmes for recognition and certification of individual schools, such as Sweden's "School for Sustainable Development", Finland's "Sustainable Development Certificate", and Hungary's "Green Kindergarten" award. Most of these efforts are voluntary and, while they are encouraged at the national level, participation remains a decision of the individual schools.

Those member States that have taken a more systematic approach to developing and implementing school plans across all schools include Canada (Manitoba), Cyprus, Finland and Hungary. The Department of Education and Advanced Learning in Manitoba (Canada) has developed a *Sustainable Schools Guide*, which has a template for schools to use when developing ESD school plans. In Cyprus, the preparation of ESD school plans have been officially incorporated in primary education and are currently being piloted in pre-primary education. At a later stage, they will be introduced in secondary education (Cyprus, 2014 informal report). The Cyprus Ministry of Education and Culture, through the Cyprus Pedagogical Institute, has written the *Guide for implementing EE/ESD in school* to support the design and implementation of school plans and to support teachers as they use include the EE/ESD curriculum in the framework of the school plan.

Finland has collected data on the success of its respective strategies to promote ESD plans in schools. In 2013, Finland suggested that approximately 40 per cent of schools have an SD plan in place, with another 11 per cent planning to do so. In Hungary, the *2011 Public Education Act* expressly legislates the whole-school approach, tasking the ministers responsible for education and environment to develop the Green Kindergarten and the Eco-School programmes across the country. Based on this

promotion, it would appear that the number of Green kindergartens has increased to 633 (17.6 per cent of all kindergartens); and approximately 700 schools are now part of the Eco-Schools programme (14.6 per cent of all schools) (Hungary, 2014 informal report). Finland has included ESD plans in its overall ESD strategies and provides schools with models, examples and practical support in drawing up SD plans.

Looking forward on priority 1: Opportunities for encouraging ESD school plans

Review and consider how to address more widely and systemically the recommendations of the school plans working group: In 2014, the school plans working group undertook a comprehensive review of work to date. Its findings are consistent with comments provided by the member States through their NIRs and informal national reports. As suggested by the working group, member States should consider how they can do the following:

(a) Raise the profile of this issue. Ministries of Education and Environment and other relevant state bodies should recognize the importance of ESD school planning for setting the structures of quality education and link ESD school planning with relevant national priorities.

(b) Integrate whole-school approaches into regulatory frameworks and curricula. Regulatory frameworks and curricula at the school level should specifically support whole-school approaches to ESD (i.e., to ensure that ESD school planning is an integrative element of schools' priority initiatives and commitments).

(c) Promote educator competences. Educator competences should be considered key to the successful and long-term implementation of whole-school approaches and the improvement of education quality.

(c) Ensure adequate financial means and technical support and incentives. Guidelines, resources, networking platforms for experience and information sharing, training for leadership and administration, as well as incentives (e.g., partnerships, award and certification schemes) play an important role for allowing whole-school approaches to unfold.

(d) Develop monitoring and assessment systems. Educational institutions should include the implementation of whole-school approaches to ESD and aim at supporting schools' self-development and improvement (UNECE Steering Committee on ESD, 2014).

4.1.1. Priority 1: Case studies

Case study 17: ESD as a whole-school approach in Manitoba

Highlights
- ESD is embedded in Manitoba Education and Advanced Learning's mission statement and included in a number of policy-related documents
- 31% of the 754 (funded and independent) schools have ESD school plans in place as of 2014

Background
Since the start of the UN DESD (2005–2014) and the Strategy for ESD (2005–2015), the Manitoba Department of Education and Advanced Learning has been encouraging a whole-school approach to sustainability. The whole-school approach guides school divisions toward sustainability in five areas: governance, curriculum, teaching and learning, capacity building, facilities and operations and partnerships.

In 2009, Manitoba Education and Advanced Learning embedded sustainability within its mission statement. The mission is: "To ensure that all Manitoba's children and youth have access to an array of educational opportunities such that every learner experiences success through relevant, engaging and high-quality education that prepares them for lifelong learning and citizenship in a democratic, socially just and sustainable society".

The department continues to identify ESD as one of its overarching goals and is one of five priority action areas identified within the department plan. In addition, the department has aligned its ESD priority with the three UNECE priority action areas and has recently added a fourth, strengthening climate change education, in order to align with Manitoba's Climate Change and Green Economy Action Plan.

In June 2012, Manitoba released its Green Plan *Tomorrow Now*, where the province made a commitment to ESD and included the following action: Encouraging all schools to have a sustainability school plan in every school by 2015. At the End of Decade of ESD Conference in Nagoya, Japan in November 2014, Deputy Minister Gerald Farthing presented Manitoba's ESD Global Action Programme Commitment, "Every School having an ESD School Plan by 2015". The deadline of 2015 has recently been extended to parallel with the UNECE ESD extension of 2019. That said, Manitoba anticipates reaching the target goal of 100% prior to the extension date.

Process
To support every school having an ESD school plan in place, the department developed a *Sustainable Schools Guide,* which includes a template for schools to use when developing ESD school plans or embedding ESD into existing school plans.

ESD outcomes are embedded in the K–12 curriculum, including the technical vocational curriculum, which supports one of the five areas of a whole-school approach.

In 2013, an ESD school plan section was developed on the department's ESD website to centralize ESD school plan resources. Professional learning sessions and support to schools developing ESD school plans is offered upon request. An ESD action project grant was established to provide up to $2,000 to schools for ESD activities.

In addition, each year since 2009, the department has encouraged provincially funded kindergarten to

grade 12 schools to apply for the Eco-Globe Schools recognition programme. This programme is intended to acknowledge Manitoba schools' commitment to integrating ESD in a whole-school approach.

When schools apply for recognition, they are assigned, upon approval, one of three levels: Awareness, Action or Transformation. Once a level is achieved, the school does not have to reapply in future years to retain it. Schools investigate the criteria that are related to each level, work towards them as the year progresses, and gradually progress through the three levels. Through this process, schools are required to develop ESD school plans.

A school that received transformational level recognition commented that "the staff has a shared vision, and anyone who steps in will want to be a part of that vision. The whole-school inquiry is now a staple for how teachers do things here." Another school commented that a whole-school approach is continuous and ongoing. "Now that ESD is embedded in the culture, the school will continue to make strides towards supporting students as they learn and experience what it means to live in a sustainable manner".

Outcomes
Between 2009 and 2014, with the Eco-Globe Schools recognition programme, 75 schools have achieved Awareness level, 69 schools have achieved Action level and three schools have achieved Transformation level.

ESD school plan data has now been collected by school divisions for each school and a baseline has been established. As of 2014, 31% of the 754 (funded and public independent) schools have ESD school plans in

place. Updated data will be available in January 2016.

Schools in Manitoba have been engaged in ESD and many school divisions require their schools to submit ESD school plans annually, as it is one of their priority areas.

Source: Manitoba, case study.

Case study 18: The Alliance of Sustainable Universities in Austria

Highlights
- Alliance makes it easier to advance sustainability at participating universities
- Participating universities committed to developing a sustainability strategy

Overview

The Alliance of Sustainable Universities in Austria[8] was founded in 2012 as an informal network of universities to anchor sustainability issues at universities and thus contribute to a more sustainable society. The initiative was started by the BOKU University of Natural Resources and Life Sciences in Vienna and the University of Graz with support from the Austrian Ministry of Research and Science (BMWFW).

The whole-institution approach is an explicit aim of the Alliance, whose objectives are to exchange good practice experiences and undertake joint activities in the fields of research, education, operations and knowledge transfer. By working through the Alliance, members gain added motivation to integrate sustainability into their institutions and, in particular, to provide support to those who are interested in and responsible for issues of sustainability within their universities.

Process

The main partners involved in the Alliance are experts who are in charge of developing, implementing and evaluating sustainability projects in their universities. These partners are drawn from both academic and administrative staff. There is an expert meeting of a group of 15 to 20 that takes place four times a year. Here, they exchange concrete projects (e.g., in the field of environmental management or education), discuss strategies for getting support from the university management as well as from university staff, and develop common projects in the field of research or operations, such as preparing joint tenders for sustainable procurement.

Several working groups deal with more specific issues. For example, the Climate Friendly Climate Research working group tackles the issue of carbon intensity of climate research. The working groups on Sustainable Mobility and Sustainable Procurement deal with operational issues, while the European Eco-Management and Audit (EMAS) group works on improving environmental performance at five participating universities.

A decision was made to keep cooperation simple and free of bureaucracy. Participants volunteer their time, but a few specific projects have been funded. Each university pays a small fee to cover expenses. Although this informal cooperation is an advantage in regard to administration, it also presents a challenge to keeping the energy and commitment high in the expert group.

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[8] Currently, nine Austrian universities are members: BOKU University of Natural Resources and Life Sciences (Vienna), Karl-Franzens-University of Graz, Vienna University of Economics and Business, Alpen-Adria-Universität Klagenfurt, University of Salzburg, Graz University of Technology, Medical University of Graz, University of Music and Performing Arts Graz, University of Innsbruck.

Outcomes

A key leverage point was achieved at the beginning of the Alliance, when each participating university committed to develop a sustainability strategy in the 2013–2015 performance agreements with BMWFW. The new performance agreements for 2016–2018 are under negotiation. Besides the joint projects and meetings, the existence of the Alliance makes it easier to advance sustainability on their university's agenda and to gain legitimacy for their endeavours.

Source: Austria, case study.

Highlights
- Green Kindergartens help to scale up the ESD work of institutions
- 700 Green Kindergartens—about 20 per cent of all kindergartens in Hungary

Overview
The *2011 Public Education Act* expressly legislates the whole-school approach, tasking the Ministers responsible for education and environment to develop the Green Kindergarten and the Eco-School programmes across the country. The Ministry of Agriculture and the Ministry of Human Resources joined efforts to promote environmental awareness of future generations by advancing practical environmental education and training beginning in kindergarten. The resulting Green Kindergarten programme provides ESD for children three to six years of age across the country. The title "Green Kindergarten" is awarded to those educational institutions whose programmes include systematic education for sustainability as a daily practice.

The main objective is to teach children environmentally friendly behaviour and lifestyle habits. Green Kindergartens contribute to sustainability by educating the next generation to become environmentally conscious and responsible citizens. It differs from the average school in that the principles of sustainability are not only present in the curriculum but in all aspects of school life from the operation of the school to the caring of children. The local community connects to its work in many ways, with local values and problems included in the pedagogical programme of the school.

Process
The titles of Green Kindergarten and Permanent Green Kindergarten are granted through applications to the Ministries of Human Resources and Agriculture. The criteria for awarding the title have been harmonized with international criteria for "whole-school approaches" to ESD. The title does not provide direct financial resources to the institutions, but possessors of the title become members of the Green Kindergarten Network. The Network co-ordinates, informs, and organizes in-service teacher training sessions and programmes that put the principles of sustainability in the centre of their operation. Within the Swiss Contribution Framework, the "Widening Green Kindergarten and Eco-school movements" project is supporting national and regional resource centres to 2016. The national resource centres provide professional and logistical background for the programme, while regional resource centres are responsible for contacts with kindergartens that intend to apply for the award, helping them to prepare the applications and meet the criteria.

Outcomes
Ten years after the first award in Hungary in 2006, there are almost 700 Green Kindergartens—about 20 per cent of all kindergartens. The title is a distinguishing mark of quality, which makes it attractive for parents, represents positive feedback on its work and gives schools an improved chance in seeking funding for environmental education and ESD pedagogy. The Green Kindergarten Network grew rapidly during the first years of the movement and has helped to scale up ESD work of institutions in the network. More recently, however, it has become difficult to attract new institutions. There may be limits to voluntary initiatives that cannot provide a financial motivation for

institutions to participate. More work is needed to determine how to reach those institutions that have not started their own development of ESD.

Sources: Hungary, case study, Hungary, 2014 informal report.

4.2. Priority 2: Introduction of ESD into teacher education

The most recent changes to the teachers' professional standard [in Georgia] were made at the end of March [2014] ...it is significant that the first provision dealing with the teachers' characteristics is as follows: "understands significance of his/her profession and responsibility for the sustainable development of the civil society and the state", emphasizing once more the significance of this issue (Georgia, NIR).

Success criteria
ESD is incorporated into initial and in-service training within at least four ISCED levels.
ESD is incorporated into training of leadership and administrative staff within at least four ISCED levels.
At least one national programme/initiative exists to support cooperation/networks/ platforms on ESD among educators.

The role of the educator is central to ESD implementation and requires interventions at the initial, pre-service stage, as well as through in-service and continuous learning opportunities. From the beginning of the Strategy for ESD, the training of educators has been considered to be pivotal in advancing ESD. The Strategy encourages member States to do the following:

- Stimulate competence development for staff in the education system;
- Include sustainable development–related issues in training and re-training programmes for educators for all levels of education; and
- Encourage educators, including those involved in non-formal and informal education, to share experiences (UNECE, 2005, pp. 54–55).
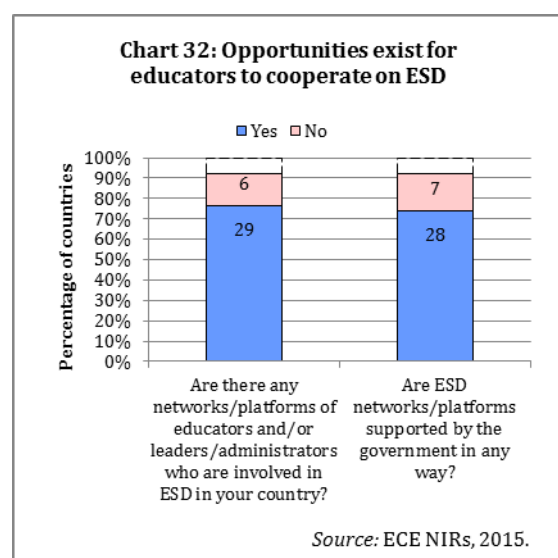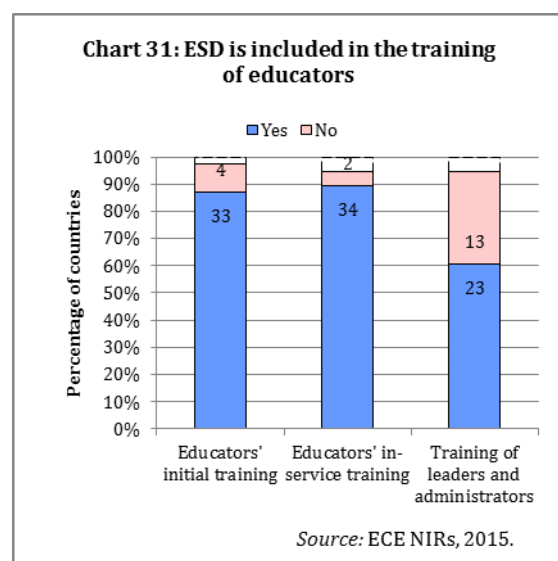
The Steering Committee established the ECE Expert Group on Competences to define more clearly the ESD competences for educators and policy recommendations for promoting those competences across the education system. The resulting Expert Group report, *Learning for the Future: Competences in ESD* (ECE/CEP/AC.13/2011/6), has served to guide a number of ECE member States as they seek to strengthen the competences of educators, and has had significant influence globally.

Most member States report that ESD is now part of initial training (33 member States—87 per cent) and in-service training (34 member States—89 per cent), with over half also addressing ESD competences in training programmes for education leaders and administrators (Chart 31). Opportunities also exist across the member States for educators to network, share experience and strengthen their capacities by learning from each other (Chart 32).

While these numbers appear high, some caution is warranted. The information on ESD training for educators, particularly for initial training, is often limited by the lack of knowledge of the activities of faculties of education, given the autonomous nature of higher education institutions in many member States. Where such information is available, many suggest that ESD in initial training is not systemic but rather made available through elective courses. Therefore, while ESD may be reported as being part of teacher education by close to 90 per cent of reporting member States, it is not clear where it has been fully integrated in teacher education by all teacher education institutions. Rather, the qualitative comments provided by member States suggest that ESD is being promoted in teacher education, but that in many jurisdictions it is not yet fully integrated. It is also not clear whether significant numbers of teachers have been

trained to date. Member States such as Canada, Cyprus, the Czech Republic, Malta and Norway all specifically noted the lack of knowledge of ESD principles and the lack of ESD competences among teachers as an ongoing challenge.

It is also not clear whether significant numbers of teachers have been trained to date. Only a third of member States attempted to estimate the percentage of teachers being trained, and, of those who did, only a few suggest that over 75 per cent of teachers have been trained in ESD through either the initial or in-service teacher education processes. The majority reported 25 per cent or less of teachers reached across all education levels.

Chart 31: ESD is included in the training of educators

Yes ■ No □

	Yes	No
Educators' initial training	33	4
Educators' in-service training	34	2
Training of leaders and administrators	23	13

Source: ECE NIRs, 2015.

Chart 32: Opportunities exist for educators to cooperate on ESD

Yes ■ No □

	Yes	No
Are there any networks/platforms of educators and/or leaders/administrators who are involved in ESD in your country?	29	6
Are ESD networks/platforms supported by the government in any way?	28	7

Source: ECE NIRs, 2015.

Efforts to address teacher education are continuing. Setting teacher education as a priority during the third phase of the Strategy appears to have contributed to the progress made during this period. From 2013 to 2014 alone, 50 per cent of member States providing informal reports indicated that there have been significant advances made with regard to ESD in both initial and in-service training.

Initial training

Legislative changes, including changes to standards and certification requirements in some member States, have been helpful to move teacher education institutions to reorient their programmes to support ESD. ESD can be found in the new Danish teacher education requirements. In France, ESD is now a cross-cutting theme in the training plans of all the academies of education, as an outcome of the 2013 *Loi de refondation de l'Ecole* [Reformation of the School Act], which embeds environmental education in the Education Code. Georgia has also adopted new Professional Standards for Teachers that incorporate sustainable development, as has Sweden, with its new teacher education requirements for competences in ESD.

In other jurisdictions, education policy-makers have taken more of a consultative and partnership approach, bringing the teacher education institutions together in a dialogue to explore the importance of ESD. In Canada, the Council of Ministers of Education, Canada (CMEC) ESD working group conducted a survey of Canadian Faculties of Education and their approach to ESD, with a view to understanding the range of actions, barriers and opportunities, and stimulating dialogue within and across faculties. Universities in some countries, such as Switzerland and Austria, have taken on the challenge independently. In Switzerland, an ESD group within the Swiss Conference of Rectors of Universities of Teacher Education has conducted an assessment of existing practices, methods and the content of courses in teacher education and prepared recommended guidelines for seven measures on how to integrate ESD in teacher education (Switzerland, NIR). In Austria, the University Colleges for Teacher Education work with the Austrian Eco-school network to develop a college-wide approach to ESD. Nevertheless, in many teacher education institutions, ESD continues to be offered as an optional discipline or a topic of seminars rather than an integrative principle, with individual teacher-educators providing their own curricula. It remains unclear from reports from member States the extent to which ESD is fully integrated across teacher education programs, how much of the introduction of ESD is mandatory, or whether, where it does exist, it is an optional course of study for teacher candidates.

In-service training and continuous learning

Approaches to introducing ESD through in-service training and continuous learning for teachers vary widely across member States, with many taking more than one approach to reach out to and build the competences of teachers who are already in the classroom. In-service ESD professional development for teachers and education leaders/administrators is often voluntary, ad hoc and delivered by NGOs or supported primarily through the provision of web-based resources. In some jurisdictions, like Monaco, training may be mandatory at one level (primary) but voluntary at another (secondary) (Monaco, NIR). Less is known about the actual content of these initiatives (e.g., do they focus primarily on curriculum content, instructional approaches or whole-school thinking, etc.?). Nevertheless the types of in-service initiatives can be grouped roughly as follows:

> **Centralized approach**: In this approach, a government agency takes the lead on the design and delivery of professional development on ESD. Compulsory

and optional courses can be offered at a central facility, on location or online. In Cyprus, the Pedagogical Institute is the organization responsible for meeting the ESD training needs of teachers. In Georgia, the Environmental Information and Education Centre of the Ministry of Environment provides teacher training on various aspects of sustainable development.

Train the trainer and teacher-coordinator initiatives: In this approach, a small group of teachers receive training and materials, which they are encouraged to share with others in their schools. Use of the *Green Pack* kit has been dispersed throughout Montenegro in this way. Cyprus also uses a train-the-trainers approach, in which a designated teacher is trained in ESD implementation and then prepares his/her colleagues at the school. In Greece, teacher-coordinators are nominated in every district to carry out ESD extra-curricular programmes.

Endorsing and/or supporting NGOs and networks to provide training: In this approach, an agency or group outside of government develops and promotes training and support materials for ESD. The network *Duurzame Pabo* in the Netherlands works to ensure that all primary school teachers learn about ESD. The World Wildlife Fund (WWF) in Sweden has been very active in ESD, producing models, strategies and related support materials for teachers.

Development and provision of ESD tools and resources: Many member States point to a wealth of websites and interactive materials that they and others have developed. Poland notes, however, that there are critical limitations to relying solely on this approach, with many teachers unfamiliar with the resources or lacking the skills to search, find and use such tools online.
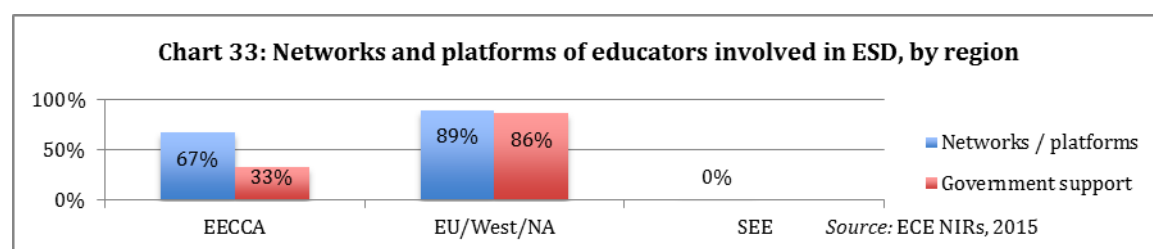
Encouraging peer-to-peer engagement, especially through existing teacher associations: In which teachers within specialty groups, such as science, technology and math (STEM), hold annual symposia with sessions on ESD relevant to their disciplines. In the Netherlands, in secondary education the associations of teachers in a specific topic (e.g., the Royal Dutch Geographical Society; the Dutch Institute for Biology, or the *Vereniging van leraren in de economisch-maatschappelijke vakken* [VECON] for teachers in economics) play a role in making the textbooks as well as the curriculum more focused on sustainable development.

Training of education leaders and administrators

Over half of the responding States have reported including ESD competences in the training of education leaders and administrators (Chart 31, above). For example, the Cyprus Pedagogical Institute now offers in-service training for leaders and school principals. In Canada, several jurisdictions are addressing training of administrators: the province of Newfoundland and Labrador has commissioned training materials to convey a consistent message of ESD among school district administrations. The Sustainability Education Academy (SEdA), now operated solely by Learning for a Sustainable Future but previously supported by the province of Manitoba in partnership with York University and Learning for a Sustainable Future, has worked with school divisions and schools to reframe their division policies, curriculum teaching and learning, capacity building, facilities and operations, and partnerships around ESD/EE. In Ontario, Regional Environmental Education Lead (REEL) positions were established in each of the major school regions: the REELs helped support school boards and educators, with the outcome that all of Ontario's 72 school boards now have an environmental education policy (Canada, NIR).

Networks of educators

Network models are also providing support for peer-to-peer learning among educators—both those involved in teacher preparation, and networks of teachers themselves. Chapters of the International Network of Teacher Education Institutions, led by the UNESCO Chair in Reorienting Teacher Education towards Sustainability, have emerged in countries such as Germany. Nearly all member States in the European Union, other Western European countries and North America group and two-thirds of member States in the Eastern Europe, the Caucasus and Central Asia group report the existence of networks and platforms of educators involved in ESD, but none were reported for the South-Eastern Europe region (Chart 33).

Chart 33: Networks and platforms of educators involved in ESD, by region

EECCA: Networks/platforms 67%, Government support 33%
EU/West/NA: Networks/platforms 89%, Government support 86%
SEE: 0%

Source: ECE NIRs, 2015

Looking forward on priority 2: Strengthening educator competences

Review and consider how to address the recommendations of the teacher education working group on "Introducing ESD to Teacher Education: Outcomes". In 2014, the teacher education working group undertook a review of work to date. The findings of the working group's 2014 review are consistent with many of the comments provided by the member States in the NIR and informal reports. The following working group recommendations should therefore be considered and are as follows:

a) Make teacher education visible in ECE strategic policy documents;

b) Reaffirm the importance of political support and leadership for teacher education;

c) Develop professional development and national mentoring programmes for teachers in ESD;

d) Promote partnerships and multi-stakeholder engagement in teacher education programmes;

e) Encourage member States to develop national workshops on ESD for teacher educators (UNECE Steering Committee on ESD, 2014).

Strengthen and support professional development networking opportunities for teachers and administrators: In addition to the working group recommendations, the importance of peer support for educators should be recognized and reinforced. Given the limited availability of government support for teacher and leader/administrator networking on ESD, particularly in member States in Eastern and South-Eastern Europe, the Caucasus and Central Asia, consideration should be given to mechanisms to foster such networks.

4.2.1. Priority 2: Case studies

Case study 20: ESD in teacher education in Cyprus—the role of mentoring

Overview
ESD lies at the core of the Cyprus educational system, and teacher education is considered to be crucial to the integration of ESD in all education contexts. In Cyprus, many promising programmes have been initiated to address teacher education in ESD. Nevertheless, there is a consensus that most offerings do not reflect sustainability concerns or competences and a transformative teacher education for sustainable development has not yet been achieved.

As a result, Frederick University and the Cyprus Pedagogical Institute, in cooperation with the University of Karlsruhe, Germany and the University of Alberta, Canada, undertook the project *ESD as an induction framework for novice teachers: Quality Educators for Quality Education*. The goal was to develop a programme for novice teachers in the framework of ESD and quality education, based on the assumption that training teachers to deliver ESD effectively at school will improve the quality of the pool of teachers. A mentoring system was designed as the training modality, due to its practical, experiential and interactive nature. The programme was expected to (a) use the potential of ESD to promote sustainability principles; (b) compensate weaknesses of university education to prepare students for actual teaching; (c) overcome limitations of conventional training programmes; (d) empower teachers to respond to the challenges and particularities of ESD implementation; and (e) use ESD as a solid path for quality education.

Process
The programme was implemented in four stages: a needs assessment; a short training programme; programme implementation with monitoring in schools; and finalization of the end products, including tools, resources and good practices. Forty-two teachers participated, forming 21 teacher pairs: one with significant experience in ESD in the role of the mentor paired with one who was either a newly appointed teacher or a novice in ESD. After attending the initial training programme, each pair worked together to deliver three teaching units in their schools on a sustainable development issue of their choice. Data on the collaboration of the mentors and novices was collected through observation sheets, reflective diaries and interviews.

Outcomes
The research outcomes confirm that ESD training can contribute to quality teaching. Both mentors and mentees benefited from the collaboration. All participants acknowledged that the programme increased their competencies in ESD and felt that it also strengthened their overall teaching skills. Results contribute to an understanding that ESD requires collaborative forms of adult education, such as mentoring or participation in professional communities of learning. The sharing of experiences among peers promoted the development of their pedagogical content knowledge, helped educators overcome the challenges of ESD and enhanced their flexibility to adjust to different needs and contexts. The project has been used to design a course for ESD and teacher education based on mentoring. However, in order for mentoring to be introduced across Cyprus teacher education, consideration must be given to how professional communities of

learning can be established in Cyprus's centralized education system.

Source: Cyprus, case study.

4.3. Priority 3: Technical and vocational education and training in support of sustainable development and the transition to green economies

> *School curricula should aim at a shift in students' thinking and knowledge, but concentrating only on knowledge will not fulfill the requirements needed for a green economy. Knowledge acquisition must be supported by the promotion of understanding and the teaching of practical skills in order to impart ESD competence and be completed by appropriate values. Green economy concepts focus mainly on top-down policies while ESD can contribute to greening the economy from the bottom up, because it has the ability to equip people with ESD competences (Slovenia, 2012 informal report).*

Technical and vocational education and training for sustainable development considers the technical skills and competences required for work in new sectors (such as renewable energy technologies), as well as for work in reorienting existing sectors to operate more sustainably (such as construction, manufacturing, tourism, hospitality services and others). However, ESD in TVET encompasses more than the acquisition of sustainable development-related skills; it includes the fostering of understanding and values necessary to change the workplace, the community and home: investments in TVET have benefits throughout all of society, and not just for the learner's employability (Buckler and Creech, 2014).

Reviewing progress on this third priority sheds light on the challenges and opportunities member States have faced in addressing this priority. In the first year, many countries focused on conceptual challenges, seeking to understand more clearly what constitutes a "green economy" and "green jobs" and how these interface with the broader societal goals of sustainability. Only a year later, countries were describing how sustainability thinking was beginning to emerge in TVET, with programming influenced by both government policies promoting the green economy and the growing private sector demand for a workforce trained in a range of environment-related skills. In 2014/15, new competences and skill sets are being defined, with a wide range of new courses and training programmes being offered. Nevertheless, progress on this third priority has been slower than actions reported for priorities one and two: less than half of responding member States (44 per cent) indicate in their 2014 informal reports that there has been significant progress on TVET in the past year.

Government policies for greening economies are part of several factors that appear to be instrumental in advancing TVET in support of sustainability. Member States such as Armenia, Bulgaria, Canada, Finland, France and Switzerland, or local governments therein, all mention the influence of national/provincial policies and/or European Union standards and directives that have required or encouraged changes to TVET to comply with environmental regulations, clean technology development and new business opportunities. The Federal Council of Switzerland's requirement for a green economy and more clean technology has been catalytic, with all basic vocational education courses reviewed for clean tech content and gaps identified across various categories of skilled professions. Fact sheets with "Cleantech" competences are now available for 217 job profiles (Switzerland, 2013 and 2014 informal report). The 2013 Green Plan *Tomorrow Now*, of the Province of Manitoba in Canada, recognizes the need to instill "green skills, knowledge and values within our existing and future

workforce", which will require the "advancing of TVET in support of the transition to a green economy" (Canada, 2013 and 2014, informal report). Manitoba Education and Advanced Learning is well underway in developing new curricula for technical-vocational subject areas, with sustainability-related learning outcomes, and has supported the development of a new programme in alternative and sustainable energy.

Equally significant has been pressure from the private sector to address the need for skilled workers in new fields: even in the aftermath of the global economic crisis in 2008, Austria points out that the "green industry" grew by nearly 6 per cent from 2008 to 2010 with a 10 per cent increase in green jobs (mostly in the field of sustainable energy technologies). Romania notes that, as of 2013, school qualifications and training have been updated to ensure a match with labour market needs (Romania, 2013 informal report). Sweden reports that the signals from companies for various green and sustainability-related competences, while they could be stronger, are definitely an improvement over five years ago (Sweden, 2013 informal report).

In 2013, the French government organized the 2nd Environmental Conference, addressing the subject of aligning technical and vocational training with changing business and jobs in the context of the transition to sustainable development. This Conference resulted in a road map with proactive measures for implementation, committing the government to action. Under this framework, the four ministers responsible for national education, sustainable development, higher education and employment also engaged the National Council for Vocational Lifelong Training to drive an ambitious project designed to propose a definition of national training priorities in the sectors mainly concerned with the ecological transition, and to capitalize the work and experiences of regions and professional sectors in terms of the impact of the ecological transition on skills and training supply. This project also falls within the framework of the new law on vocational training, employment and social democracy adopted by Parliament on 27 February 2014. Furthermore, France already includes consideration of the issues and themes of sustainable development in the rapidly changing technological commitment of initial training standards and professional schools (France, NIR).

Multi-stakeholder cooperation has been essential to retool TVET to support greening economies. Engagement of multiple partners among member States has involved governments working with industry sectors to define new competences and skills profiles and working with trade unions to ensure fair and safe development of workers in new green jobs. It has also involved TVET schools working with the private sector to secure apprenticeships and work placements and meet labour demands, and working with local communities to undertake demonstration projects, such as sustainable buildings and renewable energy installations. France highlights a major initiative of the government, *Campus des métiers et des qualifications qui réunissent, par voie de convention, des établissements d'enseignement du secondaire, du supérieur, des laboratoires de recherche et des entreprises, organisés en réseau, pour développer de manière coordonnée, des parcours de formation initiale et continue* (Campus of professions and skills that brings together, by agreement, secondary schools, higher education, research laboratories and companies, organized as a network for the development of a coordinated approach to initial and ongoing training courses). These campuses focus on specific sectors, targeting those that are consistent with the French strategy to promote new industries in the green economy (France, 2014, informal). In Canada's Northwest Territories, the Department of Education,

Culture and Employment is working with the local college, other government agencies and NGOs to develop and update curricula, policies, and procedures to ensure that vocational students are learning about the best practices that are already in use by industry in the vocational trades (Canada, 2013, informal).

Fostering entrepreneurship among TVET students and youth is considered by member States such as Romania and Sweden to be an important facet of green economic development. Skills for setting up and managing new small businesses also need to be fostered among TVET learners. The Netherlands strongly encourages teachers in TVET to also start their own businesses to ensure that they are up-to-date with the necessary skills and competences for creating successful sustainability enterprises (Netherlands, 2013, informal).

While progress has been encouraging, there are still major challenges to advancing TVET in many countries: Armenia, Georgia, Romania and Ukraine all suggest that TVET in general needs reform and strengthening, and more guidance is needed. While the demand for skilled workers in green industries may be growing across the ECE member States, and government policies for green economies are more prevalent, there remains a gap in the ability of many TVET institutions to respond to the new opportunities.

Looking forward on priority 3: Opportunities for strengthening TVET

Consider how to address the recommendations of the information paper "Aligning technical and vocational education and training with sustainable development" (UNECE Steering Committee on ESD, 2014). In 2014, an information paper was developed by the United Nations University Institute for Advanced Science and ECE to review progress on ESD in TVET. Their findings are consistent with the comments provided by the member States through their informal national reports. The following Working Group recommendations should therefore be considered:

a) Strengthen in-service training of TVET teachers;

b) Reflect national development goals in TVET policy and include TVET in national planning processes;

c) Encourage diversity of learning paths including between educational levels and across sectors (UNU-IAS and UNECE, 2014).

Align TVET with international efforts to retool TVET towards sustainable development: In addition to the above recommendations, the UNESCO Final Report recognizes the considerable work underway internationally, through which sustainable development policy and planning and TVET policy and planning are now aligning in the green economy and green skills agenda. These efforts are leading to new research and capacity-building efforts. Aligning ECE member States' TVET work with international efforts will be important. In continuing to work towards promoting ESD in national TVET systems, opportunities should be sought to work with the United Nations and related agencies, as well as with the private sector, to further define the new economic opportunities that are arising and the need for, and value of, a skilled and committed workforce inspired to change the world around them.

4.3.1. Priority 3: Case studies

Case study 21: Embedding ESD in TVET in Finland

Background

Finland has a long-standing commitment to sustainable development. Education has been identified as one of the key policy areas to achieve sustainability across the country. National core curricula for general education and national qualification requirements for TVET are among the most important policy tools to advance sustainable development in Finland. Finland is proud of its long history of providing free school and common national guidance for all, based on the following principle: good education is not a cost; it is an investment in a sustainable future. All citizens have equal opportunities to receive high-quality education and vocational training. Learners can advance their studies at a higher level, including TVET options.

Process

Promoting and supporting the diversity of learning paths across educational levels (basic/upper education and TVET) has contributed to Finland's success in advancing ESD in TVET. Education is governed by a unified national core curriculum drawn up by the Finnish National Board of Education. The Board of Education also decides on the requirements for each vocational qualification, determining the composition of studies and objectives, core content and assessment criteria for study modules. Sustainable development has been one of the seven topics emphasized in the national core curriculum for basic education since 2006. Revisions to the core curriculum for basic education, general upper secondary education and the qualification requirements of vocational upper secondary education will be released in 2016. In the revisions, the emphasis on sustainable development is strengthened further. The need for a sustainable way of living will be emphasized in the value basis of the core curriculum and vocational qualifications.

In 2012, Finland reported to the ECE ESD Steering Committee that the demands of the green economy for a skilled and knowledgeable workforce had not been addressed explicitly in TVET. By the following year, however, sustainable development was incorporated into all 52 upper secondary vocational qualifications (including 120 study programmes). Revisions to the system of vocational qualifications were driven at least in part in response to labour market needs for new skills in the green economy. Finland suggests that "the close cooperation between the vocational education sector and business is one of the reasons for success—the businesses demand knowledge of sustainable development" (Finland, 2014 informal report).

Outcomes

Sustainability is one of the key lifelong learning competences common to all vocational qualifications. All dimensions of sustainable development have been integrated into the learning outcomes (knowledge, competences and skills) of the national qualification requirements.

Sources: Finland, case study; Finland, 2012, 2013 and 2014 informal reports
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5. THE FUTURE OF ESD ACROSS THE REGION

Progress by ECE member States during 10 years of the Strategy has been recognized globally (Buckler and Creech, 2014), particularly the innovations shared on ESD indicators, whole-school planning, and teacher competences, as well as the significant advances made in reorienting education policy and curricula and aligning education objectives with national sustainable development visions and goals. However, ESD is a long-term process—one decade is not enough time to reorient and transform complex education systems. Moving forward will require action to address the challenges and obstacles that continue to slow progress on ESD, as well as create opportunities to advance the ESD agenda beyond 2015.

5.1 Challenges and obstacles

> *Without more active support from the political level, it is a challenge to successfully implement and reinforce ESD (Sweden, NIR).*

Securing and sustaining long-term leadership and political will among key decision-makers:
Leadership and political will have been critical success factors contributing to advancing ESD over the past 10 years. However, sustaining long-term leadership and political will on ESD going forward is one of the foremost challenges facing ECE member States, particularly in view of policy and staffing changes in governments. A number of member States, including the Czech Republic, the Republic of Moldova and Sweden, note the difficulty of maintaining political support and the prioritization of ESD at decision-making levels in key ministries. This includes the need for economic and finance departments to recognize the importance of investing in ESD.

Achieving structural reform of education systems: Even in places where the leadership and political engagement in support of ESD have been high, member States (e.g., Finland and Germany) and provinces (e.g., Manitoba [Canada]) find that the structural embedding of ESD throughout education systems and budgets continues to be a challenge. There are three elements to the structural reform challenge: ongoing financial resources from both government sources and the donor community, skilled professionals to advance ESD policies and practices, and more time to continue the work.

Putting in place mechanisms for cooperation, engagement and support for formal, non-formal and informal learning: The importance of interdepartmental cooperation to strengthen ESD implementation was highlighted in the UNESCO Final Report (UNESCO, 2014, pp. 58 and 167). In 2015, ECE member States described mechanisms they have used, both formal and informal, to overcome difficulties in creating and implementing a shared interdepartmental agenda on ESD. Gaps in communication continue to exist, but member States are also finding ways to promote policy coherence and coordination of work across environmental, sustainable development and education interests. Member States have also recognized that ESD requires the participation of a broader cross-section of stakeholders beyond government departments; however, facilitation skills and mechanisms continue to be needed to help align expectations and agree on common goals.

More regional cooperation and coordination on ESD is also needed. Member States—particularly those in the Eastern Europe, the Caucasus and Central Asia region—have highlighted their interest in more interaction with other States to learn about what is working and obtain more hands-on support for implementation, through the provision of regional experts and through participation in regional workshops and conferences (Ukraine, NIR).

5.2. Opportunities for advancing the implementation of ESD into the future

Even though a lot of progress has been achieved, with structures that were created, infusion of ESD to formal, in-formal and non-formal education etc., it is noted that it is essential to secure long-term sustainability of the Strategy in the national context after the end of phase III (Cyprus, NIR).

There is a political commitment that ESD implementation will continue, as it is mentioned in the policy letter of our Minister. We will continue the ESD-platform and want to underpin the activities with an EDO-wiki. This will be a platform where we can learn from each other. We want to focus on the very practical implementation (Belgium, NIR).

In 2013 and again in 2014, at its eighth and ninth meetings, the ECE Steering Committee on ESD committed to continue implementing the Strategy beyond the conclusion of Phase III (see ECE/CEP/AC.13/2013/2), with an extended framework (UNECE Steering Committee on ESD, 2015). All reporting member States suggest that they have not yet achieved full implementation of ESD, and 24 have provided more specific information about their future priorities. Member State interests in the future implementation of the Strategy are described below:

Review and strengthen existing mechanisms for implementation, refresh national strategies and plans, and expand regional and international cooperation: A number of member States, such as Ireland, have ESD strategies in place that will cover activities over the next three to five years, including actions supporting UNESCO's Global Action Programme (GAP) 2015 to 2018. Others have yet to consider what mechanisms will be needed to continue work. At the national level, each member State should be encouraged to review its progress on ESD and identify the critical success factors, including those mechanisms for multi-stakeholder dialogue and engagement both across government departments and among external groups such as NGOs, academic institutions and the private sector. As Luxembourg affirms, "the government will continue to support an inter-ministerial approach on ESD and foster a broad societal debate regarding consumerism and societal priorities with regards to prosperity and sustainable development. Cross-cutting skills will be further integrated into primary and secondary education in order to promote ESD.... ESD will be integrated in educators' initial and in-service training in the context of both formal and non-formal education" (Luxemburg, NIR).

Some thought should be given to how to strengthen capacities for collaboration, engagement, and regional and international cooperation, including establishing and supporting mechanisms for exchanging knowledge and sharing best practices across the region. Continued partnerships with UNESCO to align shared priorities and advance work on UNESCO's GAP will be important, particularly in those areas of expertise of the ECE, such as teacher competences and whole-school approaches.

Continue to strengthen the integration of ESD into education policy and sustainable development policy: Member States should reinforce sustainability in the purpose of education and embed education in national sustainable development strategies, plans and international commitments. While some countries such as Finland have integrated education into their national visions, commitments and strategies for sustainable development, changes at the operational level will need to demonstrate how education will "take its responsibility in advancing sustainability seriously" (Finland, NIR). More work will be needed by member States to support the targets on education in the new global Sustainable Development Goals, and advance education provisions in related regional environmental conventions and international sustainable development conventions and programmes.

Continue to strengthen and intensify efforts to address the three priority action areas from Phase III:

  a. **Ensure an ESD school plan in every school:** Those jurisdictions that have had some demonstrable success in meeting this target at the primary and secondary levels should be encouraged to document and share their experience, including methods for engaging the cooperation of school administrators, tools for preparing the school plans and lessons on assessment of those plans. Furthermore, school planning efforts should be extended to include institutions supporting early childhood education and care and pre-primary levels.

  b. **Encourage and support teacher education:** As the member States have reported, while progress on transforming teacher education is promising, the actual percentage of teachers and administrators who have been trained in ESD remains unclear in most jurisdictions. Teacher preparation is a central component of the process for ensuring that learners attain the knowledge, attitudes and behaviours supportive of sustainability, and should continue to be a priority in member States' ESD implementation plans.

  c. **Reorient TVET in support of sustainable development and the transition to a green economy:** At the end of Phase III, member States have reported the defining of new competences and skill sets, together with a wide range of new courses and training programmes. While progress has been somewhat slower on this priority than on others, many member States understand the importance of aligning industry demands for new skills and government interests in moving economic growth along greener and more sustainable pathways.

More attention should be given to strategies and plans to promote sustainable development in non-formal and informal learning: The limited attention given to non-formal and informal learning has been reflected in member States' reporting (50 per cent of States have either not started or are just in the first stage of progress). Creating awareness of sustainable development across other learning communities and the general public should be considered jointly with formal education in a new phase of work.

Address the need for ESD research, monitoring and evaluation: The limited availability of ESD research and the need for robust approaches to monitoring and evaluation of ESD initiatives have been identified as significant barriers to ESD implementation. Most member States in 2015 recognize the need for more research on ESD and the need for monitoring, assessment and evaluation of ESD actions and learning outcomes. Theories of learning, new methodologies for teaching and evidence of progress need to be systematically collected, rigorously reviewed and disseminated through open-access mechanisms. ESD research needs to be seen as a legitimate and important field of inquiry. Promoting the need for and value of ESD research, monitoring and evaluation should be a priority in the next phase of work.

ECE now has a considerable knowledge base on the monitoring and evaluation of ESD implementation, based on the work of the ECE Expert Group on ESD Indicators and the reporting on the three phases of the Strategy. Lessons from ECE's experience should be reviewed, and consideration should be given to collaboration with UNESCO to develop the monitoring and evaluation structure for the next phase of ESD.

5.3 Placing ESD at the core of education systems

Throughout 10 years of the Strategy for ESD, member States have committed to integrating sustainable development into education and learning. The outcomes of their efforts are consistent with

those achieved around the world through the UN DESD: ESD is being recognized as an enabler for sustainable development; ESD is spreading across all levels and areas of education and is changing approaches to learning; and a broad range of stakeholders are being engaged in the process as a necessary and effective implementation mechanism for ESD (Buckler and Creech, 2014, pp. 28–29). Across the ECE region, ESD is now reflected in the national education policy documents of the majority of member States and has led to its inclusion in curriculum frameworks, particularly at the primary, lower and upper secondary levels. ESD tools and resources are widely available in many member States, with some methods and instruments also in place for non-formal and informal learning. Efforts are also underway to promote whole-institution approaches, address educator competences and retool TVET in support of sustainability.

In a new phase of work, opportunities to integrate ESD further into education and sustainable development policy may be driven by growing national sustainable development and green economy planning, commitments to regional and international sustainable development conventions and the new Sustainable Development Goals. Sharing lessons from the ECE experience will be an important contribution to the UNESCO Global Action Programme on ESD, and to the growing national and international networks and partnerships of ESD champions and practitioners. The considerable experience and success of member States from 2005 to 2015 is an important foundation upon which to build the future ECE ESD implementation framework. This evaluation report should be a useful tool in guiding member States to consider the evidence, learn from experience, build on what is working and address gaps in strategy and action. As ECE member States prepare to commit to a new phase of work, they will inspire many more countries to continue to implement ESD, transforming education into one of the most important tools to achieve a more environmentally, socially and economically sustainable world.

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Annex II: Member States that have submitted reports and case studies during the Strategy for ESD period

Country	2007 NIR	2010 NIR	2015 NIR	2012 informal	2013 informal	2014 informal	UN DESD report	Case study
Albania							✔	
Andorra			✔				✔	✔
Armenia	✔	✔	✔	✔	✔	✔		✔
Austria	✔	✔	✔		✔	✔	✔	✔
Azerbaijan	✔							
Belarus		✔	✔					
Belgium		✔	✔	✔			✔	✔
Bosnia and Herzegovina			✔					
Bulgaria	✔	✔	✔		✔	✔	✔	
Canada	✔	✔	✔	✔	✔	✔	✔	✔
Croatia	✔	✔	✔	✔	✔	✔	✔	✔
Cyprus	✔	✔	✔	✔	✔	✔		✔
Czech Republic	✔	✔	✔	✔	✔			✔
Denmark	✔	✔	✔		✔	✔	✔	
Estonia	✔	✔	✔	✔	✔	✔	✔	✔
Finland		✔	✔	✔	✔	✔	✔	✔
France	✔	✔				✔		
Georgia	✔	✔	✔	✔	✔	✔	✔	✔
Germany	✔	✔	✔	✔	✔	✔	✔	✔
Greece	✔	✔	✔	✔	✔	✔	✔	✔
Hungary	✔	✔	✔			✔		✔
Iceland		✔	✔					
Ireland			✔					
Israel		✔						
Italy	✔					✔	✔	
Kazakhstan	✔	✔						
Kyrgyzstan	✔	✔	✔		✔			
Latvia	✔	✔	✔				✔	
Liechtenstein								
Lithuania	✔	✔						
Luxemburg			✔				✔	
Macedonia							✔	
Malta	✔	✔	✔			✔		
Monaco			✔		✔			

oldova	✔	✔	✔					
Montenegro			✔		✔		✔	
Netherlands	✔	✔	✔		✔		✔	✔
Norway	✔	✔	✔	✔		✔	✔	
Poland	✔	✔	✔	✔	✔		✔	
Portugal							✔	
Romania	✔	✔	✔	✔	✔			
Russia	✔							
San Marino								
Serbia	✔	✔	✔				✔	
Slovakia	✔	✔	✔					✔
Slovenia	✔	✔	✔	✔				
Spain	✔						✔	
Sweden	✔	✔	✔	✔	✔	✔	✔	
Switzerland		✔	✔	✔	✔	✔	✔	✔
Tajikistan								
Turkmenistan								
Turkey	✔	✔	✔			✔	✔	
Ukraine	✔		✔		✔	✔		
United Kingdom				✔				
United States of America								
Uzbekistan	✔	✔		✔				

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