VNI/2020/PI/H/4

MAPPING THE MAINSTREAMING OF EDUCATION FOR SUSTAINABLE DEVELOPMENT ACROSS SDG4.7:

A Comparative Analysis of the Mainstreaming of ESD in Cyprus, Greece, Malta and Turkey

United Nations
Educational, Scientific and
Cultural Organization

Regional Bureau
for Science and Culture
in Europe

MAPPING THE MAINSTREAMING OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

ACROSS SDG4.7:

A Comparative Analysis of the Mainstreaming of
ESD in Cyprus, Greece, Malta and Turkey

This publication was prepared by Devonne Goad
under the supervision of Igor Kitaev Programme Specialist Education,
UNESCO Regional Bureau for Science and Culture in Europe

July 2020

Peer review: Alison Kennedy, Michael Scoullos and Aravella Zachariou

ACRONYMS

ASPnet	UNESCO Associated Schools Network
DESD	United Nations Decade on Education for Sustainable Development
DRR	Disaster Risk Reduction
CoDeS	School and Community Collaboration for Sustainable Development
EE	Environmental Education
ESD	Education for Sustainable Development
EU	European Union
GAP	Global Action Programme
ISCED	The International Standard Classification of Education
MIO-ECSDE	Mediterranean Information Office for Environment, Culture and Sustainable Development
MEdIES	Mediterranean Education Initiative on Environment and Sustainability
MSESD	The Mediterranean Strategy on ESD
MSSD	Mediterranean Strategy for Sustainable Development
NIR	National Implementation Report
OECD	Organisation for Economic Co-operation and Development
SD	Sustainable Development
SDG(s)	Sustainable Development Goal(s)
SEEP	Schools' Sustainable Environmental Educational Policy
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics
UNECE	United Nations Economic Commission for Europe
UNEP MAP	United Nations Environment Programme Mediterranean Action Plan
UNESCO	United Nations Educational, Scientific and Cultural Organization
UfM	Union for the Mediterranean

TABLE OF CONTENTS

FIGURES AND TABLES

1.0 INTRODUCTION

The Covid-19 pandemic has radically altered social, economic and political systems. The unprecedented health crisis has swept the globe, threatening lives, overtaxing health care systems, cracking economies and resulting in the imposition of social and economic lockdown which includes the mass closure of educational institutions. By early April, nearly 2 billion learners (1,598,099,008 on April 2, 2020), representing 91.3% of total enrollments, were at home due to nation-wide school closures across 194 countries (UNESCO, 2020). While lockdown restrictions have eased in recent months, the major impact on learner's skills and educational attainment due to missed school and the subsequent untested and unprecedented transition to online learning is thought to be potentially associated with long-term negative impacts such as increased inequality for those most vulnerable due to their socio-economic status (Friedman, 2020; Burgess and Sievertsen, 2020). The pandemic has brought to salience how inherently vulnerable our societies are to external shocks such as disease and climate change, and has reiterated our interdependence with biodiversity. The Director-General of UNESCO, Audrey Azoulay, stated that, "This health crisis is a warning that we must heed collectively: we must now fundamentally rethink our relationship with the living world, with natural ecosystems and their biodiversity. Together we must construct a new pact with the living world. This is an immense work in progress. It will require a broad consensus, both technical and ethical. UNESCO is one of the places where such a consensus can be built" (UNESCO, 2020b).

Prior to the pandemic, environmental crises had been catapulted to the forefront of the collective conscience. The understanding that over 75% of land and 66% of the ocean was either transformed or degraded (IPBES, 2019), that over a million species were threatened with extinction over the next few decades (IPBES, 2019) and that we had but a decade remaining to stop the negative feedback loop towards uncontrolled climate catastrophe (IPCC, 2019) was gaining global familiarly. Considering both global health and environmental crises, the role of education is more important than ever. The Covid-19 pandemic has presented an unprecedented opportunity to "build back better," by allowing us to rethink our choices, our values and primarily, allowing us to re-imagine a world in which we want to live. Education for Sustainable Development is the power that can lead us to the deep societal transformation needed to create more just, prosperous, resilient and sustainable societies.

Education for Sustainable Development (ESD) "empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity" (UNESCO, 2019a). ESD, as an approach to supporting sustainable development, integrates key education concepts and processes that foster a learner's contribution to a socially, environmentally and economically prosperous future. It includes critical issues into curricula such as climate change, sustainable consumption and production, disaster risk reduction (DRR), biodiversity conservation and gender equality (among others). It also encourages the expansion beyond pure cognitive comprehension

towards the inclusion of socio-emotional and behavioral dimensions. As societal transformation through effective and innovative learning is the end goal, ESD strives to "empower learners of any age, in any education setting to transform themselves and the society they live in" (UNESCO, 2019a).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has been the lead United Nations (UN) agency on ESD since the UN Decade of Education for Sustainable Development (DESD; 2005-2014), and remained the lead throughout the five-year follow-up action plan known as the Global Action Programme (GAP) on Education for Sustainable Development.[1] As ESD was seen as a critical enabler of development under the Millennium Development Goals (2000-2015), it received a natural extension in 2015 when 193 countries united and adopted the United Nations Sustainable Development Goals (SDGs) highlighting the international commitment to maximize the benefits to people and planet by 2030.

The Global Action Programme ended in 2019 but the strengthening and continuation of ESD in society is needed now more than ever as conclusive scientific evidence agrees that the action of a single species – *Homo Sapiens* – have caused unprecedented decline in planetary health. As the covid-19 pandemic wasn't only a health crises but first an environmental crises, exasperated by the dominance of unsustainable lifestyles, ESD as a tool, prepares society to deal with the high uncertainty which characterizes our world today. By enhancing social responsibility and empowering collective action to ESD can provide learners with the capacity to deal with 'black swan[2]' events and today's "wicked problems"[3], both of which will present with severe and widespread ramifications in years to come. ESD will therefore be critical in the post-pandemic world in empowering learners to undertake sustainable action, and in re-orienting education towards a context-specific, localized, and value-based education.

The international community, under the Incheon Declaration[4], has reaffirmed the role of education as the main driver for sustainable development and thus, key enabler for achieving the SDGS (UNESCO, WEF, 2015), as did the United Nations, in 2018, under the UN General Assembly Resolution 72/222. That year, the UNESCO position paper on the future of ESD highlighted that, moving forward in a post-GAP era, "there has to be a special window for monitoring and reporting on the leadership taken by government actors," and that there must be enhanced efforts towards the implementation of a holistic and system-wide approach to education (UNESCO, 2018b). In November 2019, at the 40th UNESCO General Conference, the new global

[1] As acknowledged by the General Assembly resolutions 69/211 and 70/209.
[2] A black swan event is a rare, unique and unexpected event; something we have neither seen nor imagined. Black swan events come with severe global implications. Examples of black swan events include the dissolution of the Soviet Union, the September 11 terrorist attacks and the Covid-19 pandemic.
[3] A wicked problem is one whose "social complexity means that it has no determinable stopping point" because the problem itself is often shrouded by incomplete or contradictory knowledge, it is inextricably interconnected with other complex problems, and it cannot be addressed with traditional policy and planning tools. Climate change, terrorism and poverty are all wicked problems (Tonkinwise, C. 2015).
[4] Further discussed in Section 1.1.

framework on ESD entitled *Education for Sustainable Development: Towards Achieving the SDGs (ESD for 2030)* was adopted for the period of 2020-2030 following broad consultation.

For the post-GAP decade, UNESCO will focus on enhancing the interlinkages and tensions between ESD and the 17 SDGs, placing increased focus on political mobilization and exploring the tensions between sustainable development and economic growth (UNESCO, 2019). For the decade, the five priority action areas (policy, whole-institution approaches, teachers, youth and community level) have been re-affirmed. Thus, UNESCO, as the lead agency[5], must amass all lessons learned and contributions throughout the DESD and the GAP, to optimize and expedite the contribution of ESD to ensuring the survival and prosperity of humanity.

1.1 The International Framework with Emphasis on the Mediterranean Region

Education for Sustainable Development and its elements have been implemented by nation states under a variety of names for decades before the UNDESD. UNESCO first defined environmental education in 1974 as "a way of implementing environmental protection [which] should be carried out according to the principle of life-long integral education" (UNESCO, 1974). By 1987, in "Our Common Future" by the Brundtland Commission, the role of education received repeated, explicit mention in the "new development paradigm" (York University, 2019). Two years later, in 1989, education, public awareness and training were stated as being critical for advancing sustainable development as per Agenda 21.

This led to the United Nations Secretary-General tasking UNESCO with reorienting existing education, public awareness and training systems in 1992, with the introduction of the dedicated Chapter 36 (Promoting Education, Public Awareness and Training). In 1995, UNESCO, UNEP, MIO-ECSDE and the University of Athens, organised an important workshop in Athens on Re-orienting Environmental Education for Sustainable Development (MIO-ECSDE, 1996), which elaborated the needed steps for this re-orientation, and suggested the historic Thessaloniki UNESCO International Conference of 1997, attended by 85 countries and 1283 participants. The declaration of the Conference has substantially influenced the development of ESD.

Thus, ESD has enjoyed a long history with continually evolving definitions, strategies and objectives, and an important role in its development has been taking place in the Mediterranean. From this study area, the ERA 21 (Education and Re-Affirmation for the 21st Century), with parallel initiatives from Japan and others, led to the proposal for the UN Decade for ESD, endorsed in Johannesburg, South Africa, in 2002. Under the UNDESD, regional strategies were proposed (UNECE, 2005). The *UNECE Strategy for ESD* was the first, adopted in 2005, in Vilnius. That same year, the Mediterranean Strategy for ESD was launched by the UNESCO Regional Bureau for

[5] The role of UNESCO as the lead agency has been reaffirmed for the 2030 Framework under the United Nations General Assembly Resolution 72/222 (2017).

Science and Culture in Venice, UNEP and MIO-ECSDE, using as its basis the Strategy, and hosted in Athens by the Greek Government.

The *UNECE Strategy for ESD*, based on a multi-stakeholder participatory process, would provide lines of action for the 56 Member States within its geographic scope, thus accounting for more than 47 million km^2 and 17% of the global population across Europe, North America and Central Asia. The Strategy consists of aims to integrate the "principles, values, and practices of sustainable development" across all aspects of education (Fadeeva & Galkute, 2012).

The regional Strategy for ESD has defined six key issues for the implementation of ESD for member states within their geographic scope (Figure 1). To monitor progress, learn from each other and advance ESD, the Expert Group of Indicators developed a reporting mechanism designed to help countries and regions in moving forward throughout the UNDESD and beyond. Since 2007, countries within the regional scope have released self-reported National Implementation Reports (NIRs) every three years, tracking their progress.

In May 2014, the Mediterranean Strategy on ESD (MSESD), was completed with the support of the EU funded programme Horizon 2020 to depollute the Mediterranean and was adopted in Athens by the Ministers of Environment of the Union for the Mediterranean (UfM) (MEDIES, 2014). The MSESD was presented in the important UNESCO Conference on the conclusion of the UN Decade in Nagoya, Japan, wherein the Global Action Programme (GAP) was agreed upon.

Figure 1. Summary of the six key issues on ESD addressed in the National Implementation Reports.

In May 2015, after the culmination of the UNDESD, at the World Education Forum (WEF) in Incheon, Republic of Korea, the international community adopted the *Incheon Declaration* to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Six months later, in November 2015 at a meeting of Education Ministers at UNESCO Headquarters in Paris, the *Incheon Declaration: Education 2030 Framework for Action* was adopted at the beginning of the 38th General Conference (UNESCO, 2016). The inclusive, integrated and equitable vision for education as defined under the *Incheon Declaration: Education 2030 Framework for Action* represents a set of unified, ambitious international commitments the achieving education for learners of any age and any origin; it is the natural continuation of *Education For All* (EFA). Under the *Incheon Declaration*, the role of education as a key driver for sustainable development and thus, a key enabler for achieving the United Nations Sustainable Development Goals (SDGs) was reaffirmed.

Later in the same year, MSESD has been endorsed by the Ministers of the Environment at the Barcelona Convention as an integral part of the Mediterranean Strategy for Sustainable Development (MSSD). In 2016, in Nicosia, Cyprus, the Action Plan of the MSESD was adopted by the Ministers of Education of the Mediterranean countries, and the Mediterranean Commission on Education for Sustainable Development was established. In addition to the ministries of the Mediterranean countries themselves, the Commission also includes UNESCO (both Paris Headquarters and the Regional Office of Venice), UNEP/MAP, UNECE, UfM and the League of Arab States (LAS). The Commission is chaired by Cyprus (MEDIES, 2016).

It is noteworthy to mention that in the European Green Deal, which is considered as the most ambitious document approved by EU countries for integrating the SDGs, has indicated the role of institutions and education as critical for achieving change and successful transition to sustainability (EU, 2019). Section 2.2.4. of the European Green Deal, on *Activating education and training*, highlights the unique position of institutions to empower the changes needed for a successful transition, re-iterates the need for enhanced financial resources to make schools and institutions more sustainable, and states the necessity of up-skilling and re-skilling of Europe's workforce under the Skills Agenda and the Youth Guarantee (EU, 2019). Moreover, the Council of the European Union has echoed the critical role of ESD in stating that "the Council stresses the importance of awareness raising through Education for Sustainable Development (ESD) as key enablers of all other SDGs and as drivers for innovation, resilience and transformative action" (Council of the European Union, 2019).

Beyond the European Region, 188 states have ratified the UNFCCC[6] Paris Agreement and therefore committed to lowering greenhouse gas emissions to keep global warming well below the 2°C threshold. Article 12 of the Paris Agreement states that "Parties shall cooperate in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps

[6] United Nations Framework Convention on Climate Change (UNFCCC)

with respect to enhancing actions under this Agreement" (UNFCCC, 2015). The explicit use of "shall" in the above-mentioned provision is important in that it creates a legal obligation for parties with respect to sustainable education.

It should be further noted that ESD is also included in various other international agreements regarding sustainable development, such as the other two conventions signed in Rio in 1992, on biodiversity[7] and desertification[8]. ESD is also recognized in the Sendai Framework for Disaster Risk Reduction, and the 10-Year Framework of Programmes on Sustainable Consumption and Production (2012-2021).

1.2 Sustainable Development Goal 4.7

We have but ten years left to achieve the ambitious set of 17 universal goals defined under the 2030 Agenda[9] which strive to end poverty, protect the environment and ensure prosperity for all (UN, 2015). Education under the SDGs is seen as crucial to the realization of sustainable development and is articulated as a stand-alone goal – SDG4, *Quality Education: To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*.' SDG4 is composed of ten targets, which focus on increasing the quality, accessibility and inclusivity of education as a basic human right, for all learners.

United Nations, 2015
Source Image: Goad (2020)

[7] The United Nations Convention on Biological Diversity (CBD); all four countries assessed in this report have ratified the treaty.
[8] The United Nations Convention to Combat Desertification (UNCCD) was adopted in Paris, France on 17 June 1994 and entered into force in December 1996. All four countries assessed in this report are signatories to the convention.
[9] In 2015, 193 countries united and adopted the United Nations 2030 Agenda for Sustainable Development.

Education for sustainable development is encapsulated as the seventh objective under SDG4. SDG4.7 aims to ensure that learners of any age can contribute to the pressing environmental, economic and social challenges of today through the re-orientation of education "beyond pure literacy and numeracy" towards value-based, action-oriented and context-specific education (UNESCO, 2019b). This means expanding and rethinking education towards the "knowledge, skills, values and attitudes required by citizens to lead productive lives, make informed decisions and assume active roles locally and globally in facing and resolving global challenges" (UNESCO, 2017a).

1.3 ESD for 2030

Education for Sustainable Development, as proposed under *Education for Sustainable Development: Towards achieving the SDGs (ESD for 2030)* is key to solving the complex sustainability issues that permeate all facets of development. The GAP made good progress, "exceeding its targets for 2019 in four out of its five Priority Action Areas (policy, education and training, educators and communities)" (UNESCO, 2019c). The GAP also saw over 900 strategic ESD policy developments supported by GAP partners and an estimated 26 million learners in formal and non-formal settings that were exposed to ESD curricula and special projects. If we wish to meet the SDGs, however, we need greater interlinkages between partners, enhanced cross-sectoral cooperation and collaboration across national, regional and international levels, as well as increased investment in research, monitoring and evaluation of ESD activities.

ESD for 2030 recognizes that "Partners of different sectors should work more collaboratively across the Priority Action Areas" and to advance this, "the five Partner Networks will be merged into one inclusive Network of Partners, in order to facilitate cross-sectorial work" (UNESCO, 2019c). The *ESD for 2030* framework therefore presents a unique opportunity to enhance cross-sectoral cooperation and collaboration through the implementation of ESD in UNESCO programmes such as Man and the Biosphere (MAB), the World Network of Biosphere Reserves (WNBR) and World Heritage Sites. It also offers the opportunity to integrate ESD in other sectors through close collaboration "with key technology stakeholders, namely business, manufacturing and enterprise sectors" (UNESCO, 2019c). It is noteworthy, that the direct link between ESD and the MAB Biosphere Reserves is documented in the book "Education for Sustainable Development (ESD) in Biospheres Reserves and other Designated Areas: A Resource Book for Educators in South-Eastern Europe and the Mediterranean", jointly produced by UNESCO Regional Bureau in Venice, MIO-ECSDE and the Secretariat of MAB.

1.4 Detailed Problem Definition

The commonly cited UNESCO definition states that "Education for Sustainable Development empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity" (UNESCO, 2015). And the benefits of ESD are such that "it can promote a shift in people's mindsets and in so doing enable them to make our world safer, healthier and more prosperous, thereby improving the quality of life" (UNECE, 2005).

However, the advantages of ESD according to this definition – that it is broad, multi-faceted, cross disciplinary and holistic enough to encompass humanistic and moralistic aspects of education – happens to also be the very disadvantages that hinder accurate, consistent monitoring across various spatial scales. Thus, increased coordination and awareness of existing ESD initiatives, activities and best-practice examples can serve to facilitate knowledge transfer of the successes and challenges concerning ESD implementation, thus contributing to the realization of our shared goals and values.

Based on the aforementioned, it is critical to know were we stand, what we have achieved, where we want to go and how best to integrate ESD in the new decade 2020-2030, with regards to both national and regional contexts. To successfully achieve this, it's not enough to simply be aware of the international or regional ESD frameworks; it is crucial that monitoring mechanisms which operate as a vehicle to identify how ESD is implemented in national and regional contexts are also designed and implemented. The ESD for Strategy has seven objectives that reflect not on sustainable development contents as such, but on the prerequisites to deliver education for sustainable development that meets the need for change, is the only process at the moment that can provide us, throughout the years, with concrete results regarding ESD implementation in national contexts (UNECE, 2004). The regular monitoring and reporting of progress of the Strategy on ESD is conducted though submission of National Implementation Reports. As of 2018, the UNECE Steering Committee on ESD has carried out its fourth national implementation reporting cycle, with previous cycles carried out in 2007, 2010, 2015. The UNECE Expert Group of Indicators developed a national reporting mechanism based on quantitative [binary (yes/no)] and qualitative indicators to collect thorough information about the successes and challenges on ESD.

2.0 METHODOLOGY

2.1 Research Scope & Objective

The objective of the present report is to summarize the state of ESD implementation in Cyprus, Greece, Malta and Turkey (Figure 2). This report will summarize and share the successes and challenges highlighted within National Implementation Reports, as such a summary could be an important contribution to UNESCO, as the organization is currently facilitating dialogues to establish the direction of the new global programme for ESD. For that reason, these four

countries within the regional scope of the UNESCO Regional Bureau in Venice, Italy, were chosen for the preliminary study.

For the purpose of this study, the binary data contained within the National Implementation reports of Cyprus, Greece, Malta and Turkey were extracted to summarize the state of ESD implementation. For the purposes of this analysis, the term "region" will be used to refer to the four Mediterranean countries assessed within the report, unless otherwise specified. Countries will always be listed in alphabetical order. A complete and detailed methodology is available in Annex A.

The Mediterranean Region has a unique history, referred to as both the "incubator" and the "cradle" of civilization (Sağlamer, G. 2013), hosting a diversity of religions and ethnic groups (de Châtel, F., Holst-Warhaft, G. and Steenhuis, T., 2014).

As already indicated in the previous chapters, ESD in the Mediterranean and the study area, in particular, has a considerable history and has been systematically promoted by the UNESCO Regional Bureau in Venice and MIO-ECSDE, and further supported through capacity building workshops by the H2020 programme. Despite the shared history, today, each of these countries has a unique economic, educational, socio-demographic and environmental situation. A comparative analysis of ESD in the region is needed to understand how these four Mediterranean countries, despite their differences, have responded, and such a report could serve to guide the governments in their next steps (MIO-ECSDE, 2018a).

Figure 2. Map of countries assessed in the present report.

3.0 RESULTS

3.1 Overall Summary of Regional Implementation

Individual responses to NIR survey questions were quantified, tallied and standardized to yield an overall summary of implementation across all 66 sub-indicators (Appdx. 1). While no country assessed has yet achieve full implementation of ESD, high implementation rates have been reported in Cyprus (88%), Greece (84%), Malta (73%) and Turkey (58%). The NIR consists of a large number of indicators (18) and sub-indicators (66) and data was therefore disaggregated to see where countries have made significant progress and where the greatest challenges lie for the future of ESD with respect to the 2030 Agenda and the *ESD for 2030* framework.

3.1.1 Stakeholder Involvement

National Implementation Reports (NIR) are submitted on behalf of the country. To compile the information, it is highly recommended that government authorities consult widely with other relevant stakeholder so that they may contribute to the report. The relative proportion of stakeholders cited in the NIR are found in Figure 3. Greece and Malta show similar relative proportions of stakeholder involvement: dominant involvement of a wide range of NGOs (~50%), and similar proportions of involvement of several levels of government and academia (15-20%). Cyprus shows a higher proportion of government involvement relative to other stakeholders as the Cypriot NIR lists involvement of each individual department, rather than each ministry (as in Greece and Malta). No stakeholders from NGOs, Academia or 'Other' were consulted or contributed to the preparation of the Turkish NIR.

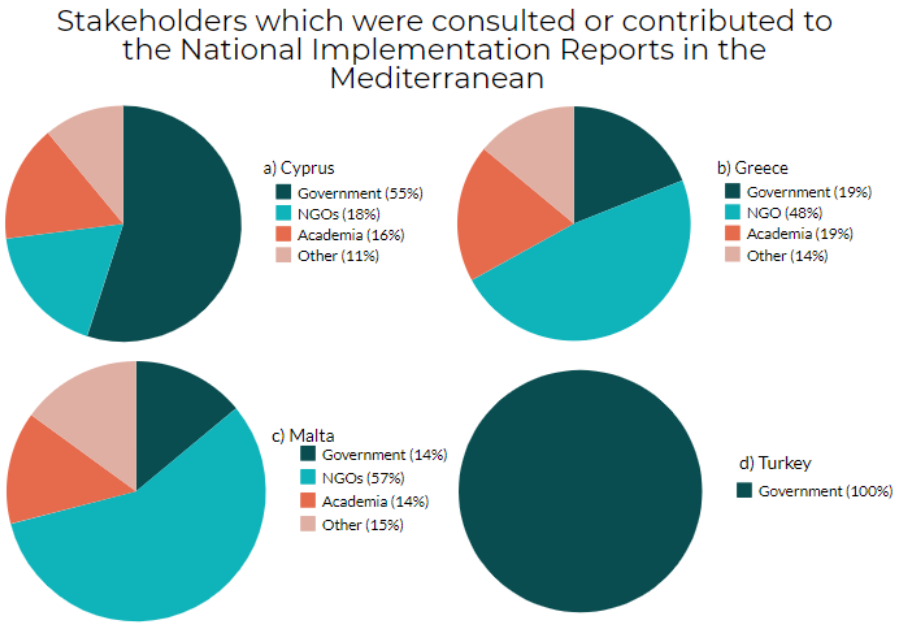


Figure 3. Relative proportion (%) of stakeholders which were consulted or contributed to the National Implementation Reports in a) Cyprus, b) Greece, c) Malta and d) Turkey.

3.1.2 Implementation According to Key Issues

The responses to each of the six quantifiable issues were tallied and standardized (Figure 4). When half (50%) of the data within an issue were absent from a country's report, that issue was excluded from calculations. Cyprus, Greece and Malta have reported on all six indicators. Data for Turkey was unavailable for Issues 3-5 which examine ESD in teacher training, the availability of tools and materials for ESD, and the promotion of ESD research and development, respectively.

Cyprus, Greece and Malta have reported full (100%) implementation of *Issue 3. Equip educators with the competence to include SD in their teaching* and *Issue 6. Strengthen cooperation on ESD at all levels within the ECE region.* Greece is the only country to have reported full (100%) implementation of all sub-indicators within *Issue 2. Promote SD through formal, non-formal and informal learning*. Cyprus is the only country to have reported full implementation of I*ssue 1. Ensure that policy, regulatory and operational frameworks support the promotion of ESD*. Regionally, Cyprus, Greece and Malta approach full implementation. For three of the six issues reported on in the Turkish NIR, Turkey has reported an overall implementation of 56%.

With regards to *Issue 1 - Ensure that policy, regulatory and operational frameworks support the promotion of ESD* – Figure 4 highlights that Cyprus has reported 100% successful implementation, and Greece and Malta with 87% successful implementation each, and Turkey at 60%. Education for Sustainable Development is broad in both scope and ambition but depends on high levels of policy commitments if ESD's contribution to the sustainable future is to be maximized.

Most notably, Figure 4 highlights that more significant challenges remain for all four countries with regards to *Issue 4 – Ensure that adequate tools and materials for ESD are accessible* and *Issue 5 – Promote research on and development of ESD* relative to other issues. Malta, for example, has achieved 33% implementation on *Issue 4,* while for all other Issues (that is, excluding Issue 4), the country report an average implementation rate of 91% (Figure 4). Tools and materials on ESD should be easy to comprehend by both teachers and learners, and easy to assess to encourage the practical and feasible implementation of ESD.

Rates of implementation were reported under *Issue 5. Promoting research on and the development of Education for Sustainable Development* as 83% in Cyprus, 75% in Greece, 83% in Malta. Despite considerable progress over the past decades, potential ESD research topics remain abundant and include strategies, communication and resources, among others. The promotion of ESD-focused research and the development of ESD itself is therefore critical to expedite its contribution to achieving sustainable development. The various country level approaches and challenges in *Issue 5,* as well as the five other ESD Issues, will be examined in greater detail through disaggregation to indicator and sub-indicators level in proceeding sections.

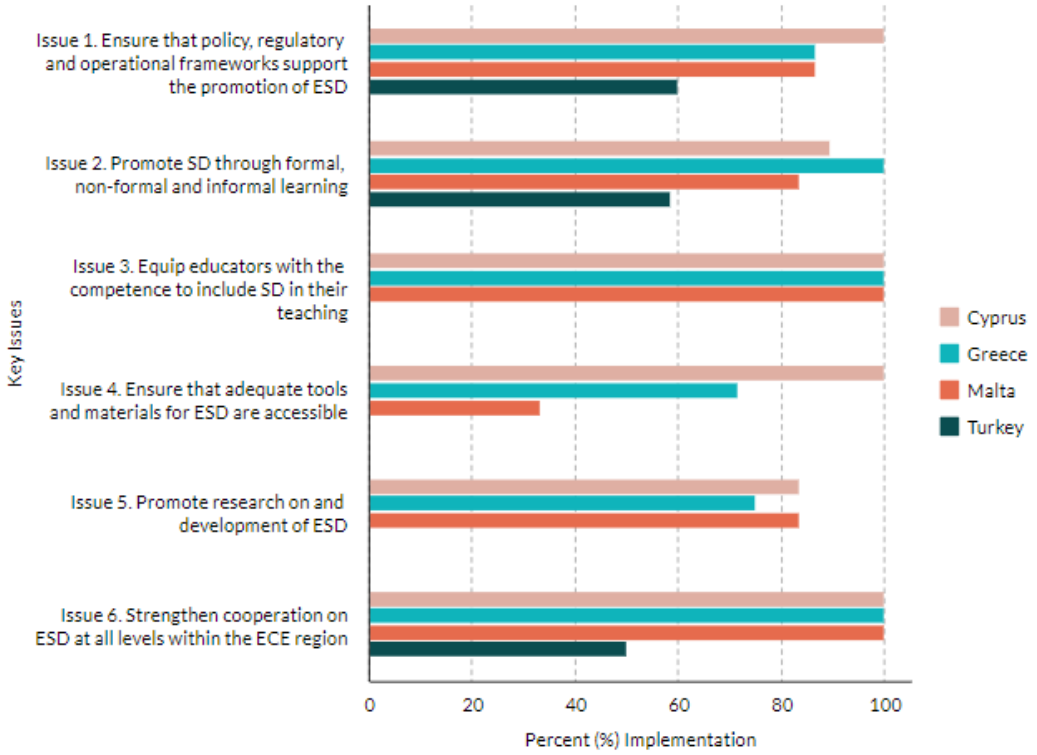


Figure 4. The overall percentage (%) of positive ("yes") responses to sub-indicators as per the National Implementation Reports for Cyprus, Greece, Malta and Turkey, grouped according to Key Issues. Data from Turkey were unavailable for Issues 3, 4 and 5 and is therefore absent from the graph.

3.1.3 Implementation According to ISCED Levels

19 of the 66 ESD sub-indicators were assessed across 8 International Standard Classification of Education (ISCED) levels and an additional four sub-categories[10]. An overall average across these levels was taken and compared to the average rate of implementation across standard sub-indicators (those indicators not assessed across ISCED levels) (Figure 5). While countries often reported "yes" when successful implementation applied to at least one level of education, there is clear variation among the levels of education themselves with regards to implementation. There is also clear variation with regards to implementation reported across ISCED levels relative to binary (yes/no) sub-indicators. For example, Cyprus[11] has reported near complete (88%)

[10] Henceforth, both levels and subcategories will be referred to as "levels" to eliminate potential confusion between indicators and categories. For a complete list of levels assessed See Appdx. 3.

[11] "The tables with ISCED levels provided in the "yes/no" part of indicators 1.2.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.4.1 and 4.2.2 have been updated to reflect the growing interest in technical and vocational education and training by adding the relevant ISCED programme orientation category for vocational education, as follows: 25. Lower secondary vocational education; 35. Upper secondary vocational education; 45. Post-secondary non-tertiary vocational education; 55. Short-cycle tertiary vocational education. Similarly, the tables containing a breakdown by ISCED levels provided in appendixes I (a), (b) and (c) and appendix III have been also updated with the inclusion of these additional levels 25, 35, 45 and 55 for vocational education. Countries are invited to assess these levels if they have relevant information and data. Additional change was proposed during the thirteenth meeting of the

implementation of the standard sub-indicators (yes/no) but implementation is reported at 58% when assessed across ISCED levels for the 19 sub-indicators. In Greece and Malta, the trend is similar: from 84% to 55% in Greece and from 73% to 55% in Malta. Turkey has reported 58% implementation across standard sub-indicators associated with Issues 1, 2, and 6, and has reported 16% overall implementation across the 18 ISCED sub-indicators levels for which data was available.

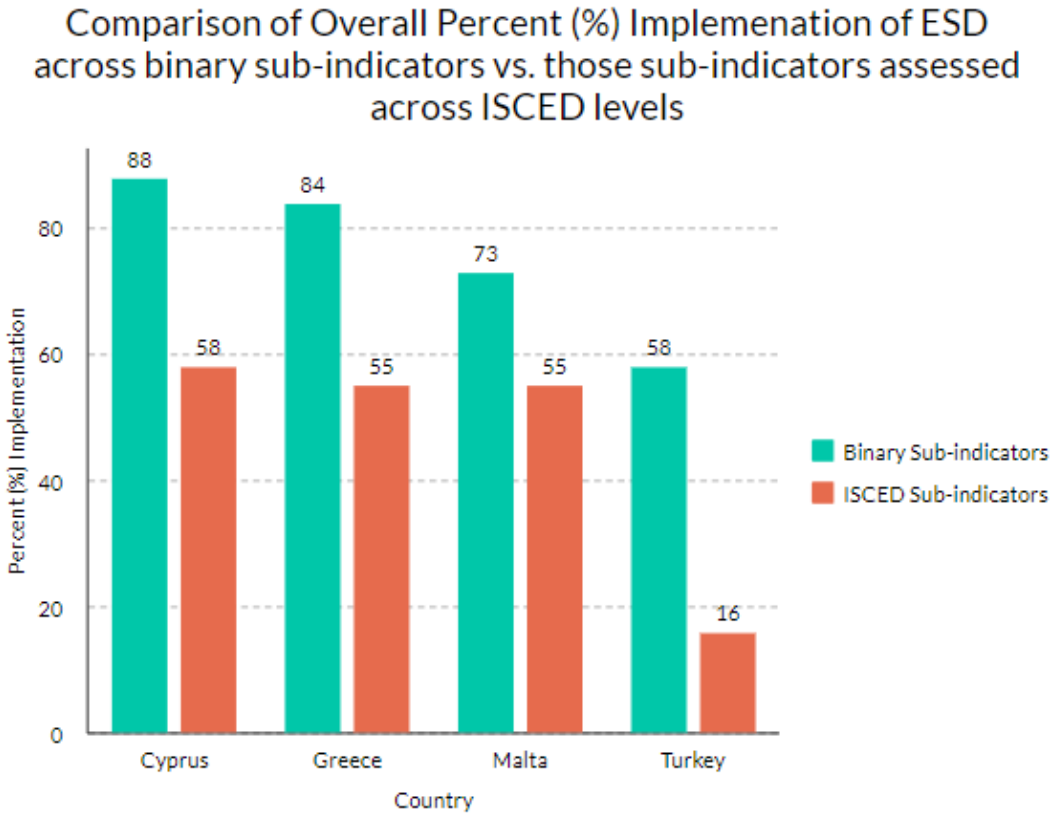


Figure 5. Comparison of overall percent (%) implementation of country responses to standard binary sub-indicators (yes/no) versus those sub-indicators assessed across ISCED levels for Cyprus, Greece, Malta and Turkey. All data were extracted from 2018 National Implementation Reports. Cypriot data from the 2018 NIR was completed using the previous (2015) reporting template and therefore data were averaged across less levels of education. All data were averaged over total number of indicators and never weighted.

Average country responses to those 19 sub-indicators were then calculated for each level of education (Figure 6). Greece is the only country to have reported 100% implementation of the sub-indicators assessed across primary, lower secondary and upper secondary levels of

Steering Committee (3-4 May 2018): where appropriate, the tables with ISCED levels have been updated by adding one option for the answer "9. No information available". Cypriot data was updated in 2020, but reflects the previous system as the older template was used. (UNECE. 2018).

education. At early childhood education, Greece has implemented 18/19 (95%) of the ESD indicators – only presenting challenges with regards to the development of SD/ESD indicators for nonformal institution/organization, which has not yet been implemented (See Section 3.3.3).

Cyprus and Malta have reported high rates of implementation across primary and secondary education – at 79% and 80% each. However, Malta has reported lower rates across Early Childhood Education (ECE, 69%) relative to primary and secondary education. This could be, in part, because ECE in Malta is not compulsory. Turkey has reported 42% implementation across primary and lower secondary education for the 18 sub-indicators for which data was available. Furthermore, Turkey has reported 37% integration across upper secondary education.

At upper and lower vocational education, Maltese rates of implementation are consistent with primary and secondary education (79% each). In Greece, implementation at lower secondary vocational education has been reported at 50% implementation, and upper secondary vocational at 74%. Turkey has reported 42% implementation at upper secondary vocational, but no data was available for lower secondary vocational education as it does not exist in Turkey.

Implementation outside of Early Childhood, Primary and Secondary Education is lower than within. Cyprus, Greece and Malta have reported implementation levels across the post-secondary non-tertiary levels of education (ISCED 4) at 33%, 42% and 63%, respectively. Data was not available for Turkey across ISCED 4 as the country does not have ISCED programmes.

At post-secondary non-tertiary vocational education (ISCED 4.5) rates of implementation were lower than reported in primary and secondary: 37% in Greece and 47% in Malta. No data was available for Cyprus for ISCED 4.5.

Overall implementation rates for short-cycle tertiary education (ISCED 5) were reported at 40% in Cyprus and 10% in Malta. No data was available at ISCED level 5 Greece, as the country does not have ISCED 5 programmes. No data was available on ESD implementation across the ISCED level 5 programs in Turkey. Malta is the only country to have reported ESD implementation at short-cycle tertiary vocational education (ISCED 5.5) and has reported implementation of 2 of the 19 sub-indicators (11%), wherein is ESD addressed through existing subjects and through the cross-curricular approach at this level (See section 3.3.2). No data was available for Cyprus with regards to short-cycle tertiary vocational education.

Implementation rates approach 50% at the Bachelor's level in Cyprus (40%), Greece (47%) and Malta (42%). At the Master's level, implementation of ESD sub-indicators has been reported as higher than Bachelor's level for Cyprus and Malta, at 47% each. Greece has reported a lower rate of implementation across Master's level relative to Bachelor's: at 32% relative to 47%. Greece has also reported 32% implementation of ESD sub-indicators at the doctorate level. Cyprus and Malta have reported 40% and 26% implementation at the doctorate level, respectively. No data was available for Turkey across higher levels of education.

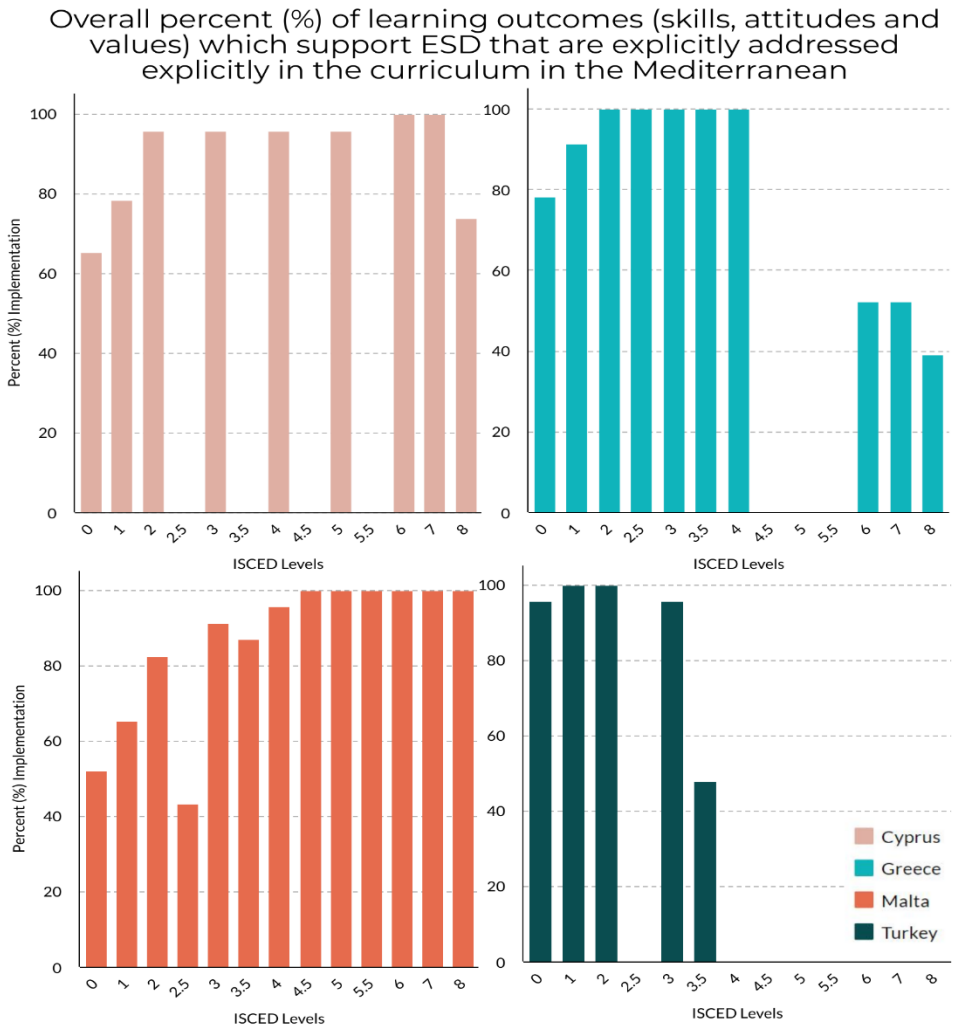


Figure 6. Overall percent (%) implementation of 19 ESD sub-indicators, averaged per ISCED level in Cyprus, Greece, Malta and Turkey. Data for Greece, Malta and Turkey is extracted from the 2018 NIR. Cypriot data are from 2018, but was completed using the 2015 template, and therefore percentages were calculated across the 15 sub-indicators assessed in the 2015 reporting template across 9 rather than 13 ISCED levels.

3.2 Issue 1 – Ensure that the policy, regulatory and operational frameworks support the promotion of ESD

Under Issue 1 of the National Implementation Reports (NIRs), countries report on their policy, regulatory and operational frameworks required to support the promotion of ESD. Issue 1 is composed of three indicators and thirteen sub-indicators (Figure 7).

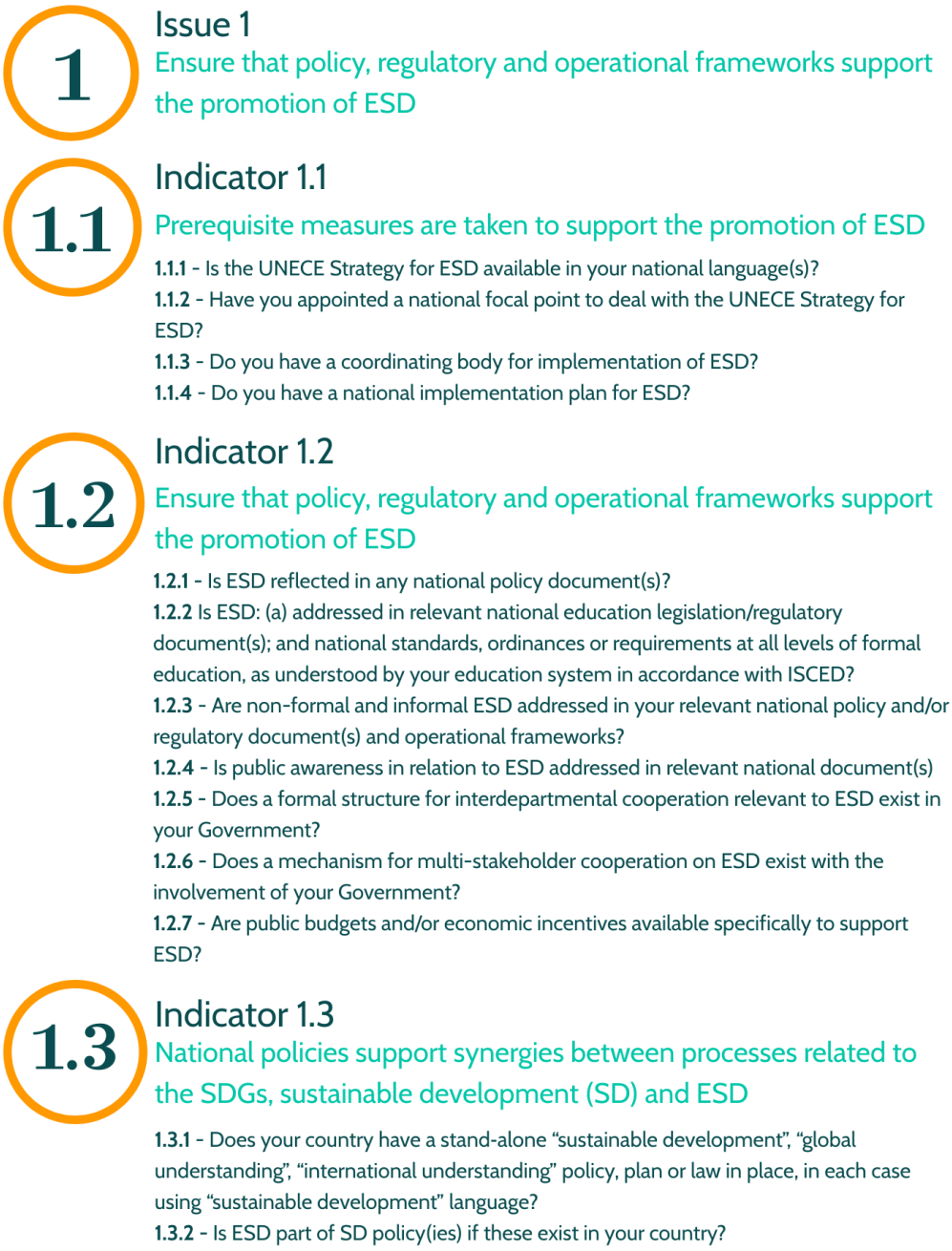


Figure 7. Graphical summary of the indicators and sub-indicators addressed under *Issue 1 - Ensure that policy, regulatory and operational frameworks support the promotion of ESD,* as per the National Implementation Reports on ESD.

The average implementation rates for the three indicators associated with *Issue 1. Ensure that policy, regulatory and operational frameworks support the promotion of ESD* are depicted graphically in Figure 8. Cyprus is the only country to have reported full implementation across the 15 sub-indicators associated with Issue 1. Greece has reported full implementation of the five prerequisite measures associated with Indicator 1.1 and the two measures associated with

Indicator 1.3. National Policies support synergies between processes related to Sustainable Development Goals (SDGs), sustainable development (SD) and Education for Sustainable Development (ESD). Greece has further reported that six of the eight (75%) measures associated with *Indicator 1.2. Ensure that policy, regulatory and operational frameworks support the promotion of ESD* have been implemented.

Malta has reported full implementation of Indicator 1.2 and 1.3. For *Indicator 1.1 Prerequisite measures are taken to support the promotion of ESD,* Malta has reported successful implementation of three of the five associated sub-indicators (60%). Turkey has reported, on average, 58% implementation across the three indicators associated with Issue 1.

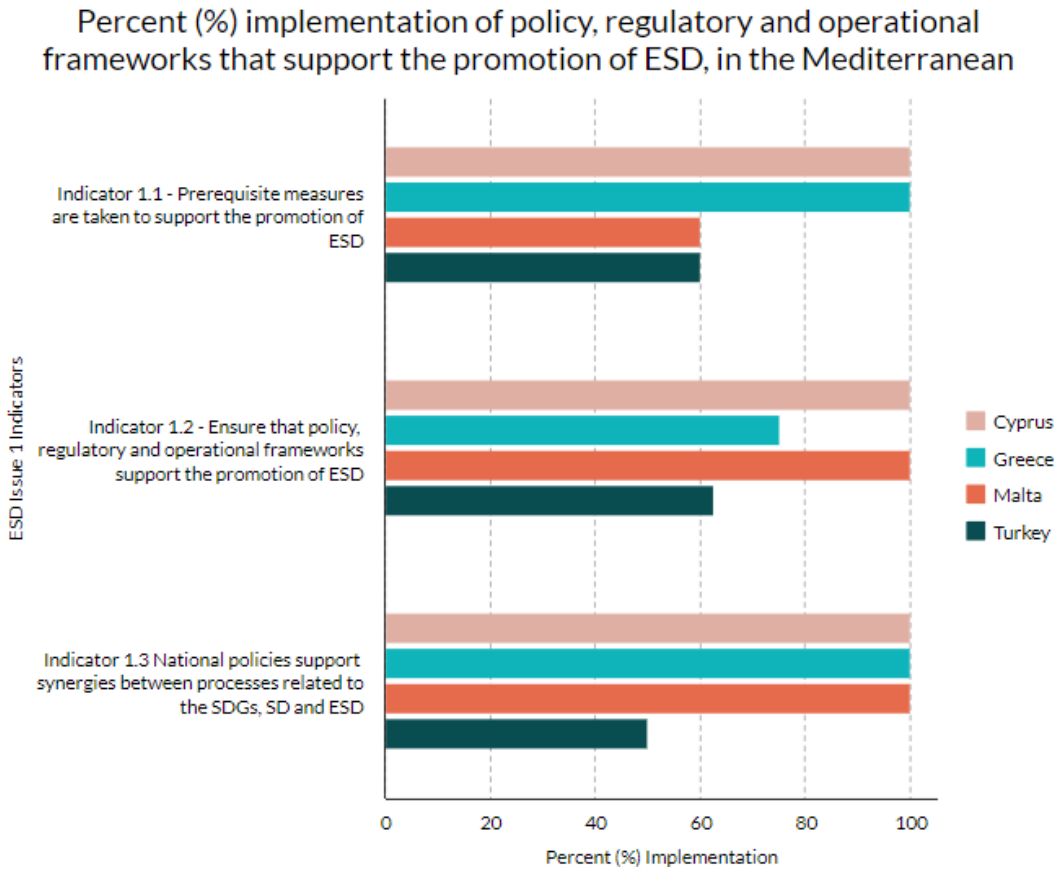


Figure 8. Percentage (%) of successfully implemented ESD indicators associated with *Issue 1. Ensure that policy, regulatory and operational frameworks support the promotion of ESD*, presented as the average number of positive ("yes") responses to sub-indicators per indicator, as per the National Implementation Reports of Cyprus, Greece, Malta and Turkey.

3.2.1 Indicator 1.1

Successfully reorienting education to ensure that leaners across all levels of education acquire the skills, values, and perspectives required to address the crises of the 21st century demands a

structured and strategic meta policy approach. This in turn requires planning and pre-requisite measures. Three pre-requisite measures required to support the successful implementation of ESD are defined under the ESD indicator 1.1.

Under sub-indicator 1.2 of the Regional Strategy of Education for Sustainable Development, a country's first step is to make the Strategy Document available in their official language(s). Regionally, three of four countries - Cyprus, Greece and Turkey – currently have the ESD Strategy available in their national languages, while in Malta the strategy is available in one of two national languages – English – but not yet Maltese (sub-indicator 1.1.1, Appdx. 2). As of 2018, 89% of the Maltese population spoke English well enough to hold a conversation[12], however the figure reduces to 74% when respondents were asked whether their English proficiency was sufficient to read news articles[13]. In Malta, increases in rurality and age correspond to decreases in English proficiency. As the country is strongly committed to Lifelong Learning through its corresponding national Strategy, the availability of the Strategy in Maltese would increase the inclusivity of ESD itself.

A national focal point is a person that has been designated to represent the national competent authority. National focal points play a key role in coordinating ESD-related activities, supporting the promotion of ESD at international, regional and national levels, and facilitating information and knowledge sharing. All four countries in the Mediterranean have successfully appointed a national focal point to deal with the Regional Strategy for ESD (Sub-indicator 1.1.2, Appdx. 2) – two each in Cyprus and Greece and one each in Malta and in Turkey.

Under, Sub-indicator 1.1.3, all four countries also have a coordinating body for the implementation of ESD (Appdx. 2). A national coordinating body is important if member states wish to ensure effective involvement of all relevant stakeholders in the planning and implementation process.

In Cyprus, the Cyprus Pedagogical Institute has been the coordinating body on ESD since 2007. Decisions about various central actions for ESD are taken by an intersectional committee, chaired by the Director of the Cyprus Pedagogical Institute, in which all of the Directorates of Education participate with individual representatives from other Ministries, Governmental Services, Public Authorities and Non-Governmental Organizations. In December 2018, the Unit of Education for the Environment and Sustainable Development (EESD) was permanently established as a horizontal structure of the Ministry of Education, Culture, Sports and Youth (ECSY) designed to tackle "the chronic problems that existed in the field, such as the fragmentation of issues within each Directorate, the overlap, and the absence of a unified policy in the field of ESD at all levels of education" (Republic of Cyprus, 2018a).

In 2018, Greece established a new Directorate under the Hellenic Ministry of Education, responsible for the "Support of School Programs and Education for Sustainability." The new

[12] Source Data: Eurostat (online data code: edat_aes_l21). [Accessed March 9, 2020].
[13] Ibid.

Directorate is the result of a 2016 proposal by a Scientific Committee on the development of a new structure supporting ESD. In Malta, the Ministry for Education and Employment (MEDE) is the coordinating body for implementation of ESD and in Turkey it is the Directorate General for EU and Foreign Relations within the Ministry of National Education (MoNE).

National Implementation Plans for Education for Sustainable Development (sub-indicator 1.1.4, Figure 9) are critical as they define a country's most effective way forward in terms of expediting and optimizing investment, research, partnerships and opportunities related to ESD. Cyprus and Greece are the first two countries to have reported a national implementation plan for ESD. It has been noted that Cyprus is currently upgrading its national implementation plan for the decade 2021-2023, based on new evolutions, developments and challenges for ESD at the national, regional and international levels. To proceed with the Implementation Plan, the Unit of Education for Environment and Sustainable Development (EESD) of the Cyprus Ministry of Education, Culture, Sports and Youth has established a public consultation process for engaging all interested parties and thus, maximizing ownership and enhancing commitment to effective integration of the updated ESD National Plan in the country. In Malta, the public consultation process regarding the National Strategy for ESD has been held, and the coordinating body for ESD, the Ministry for Education and Employment is facilitating the compilation of an ESD implementation plan. Turkey does not yet have a national implementation plan.

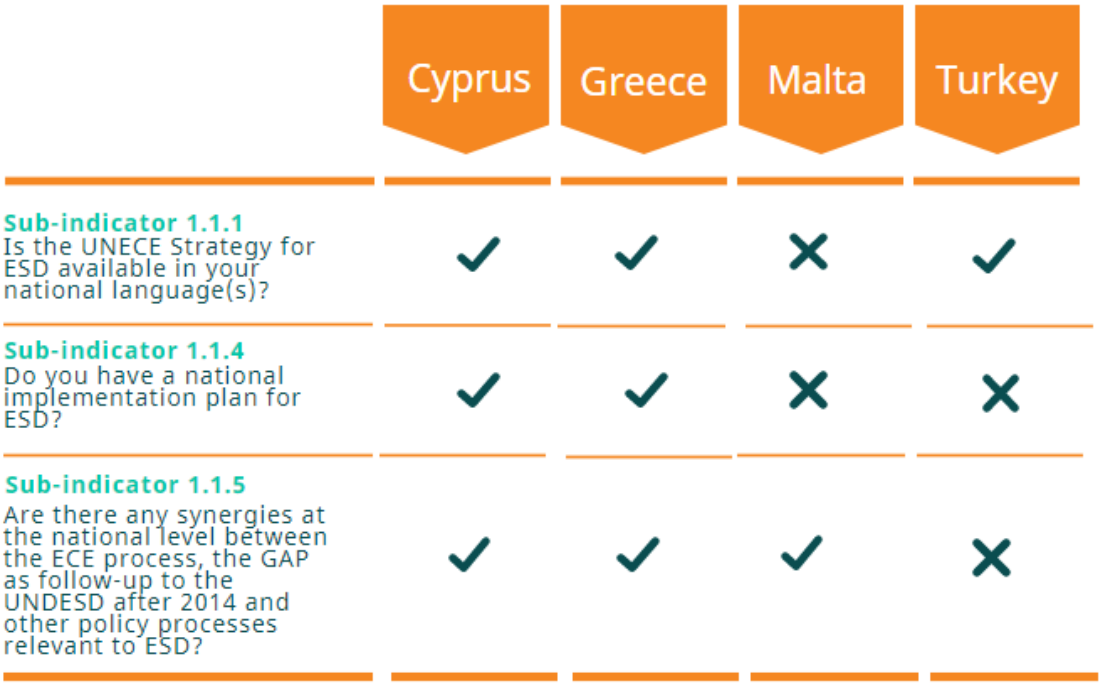


Figure 9. Country responses to sub-indicators associated with the ESD indicator 1.1 in Cyprus, Greece, Malta and Turkey. All data are based on country's 2018 (third cycle) National Implementation report. All four countries reported "yes" on sub-indicators 1.1.2 and 1.1.3. These data are therefore only available in Appdx. 2.

Given the broad and inclusive nature of ESD, it has been suggested that countries undertake coordinated efforts "to find synergies with other relevant national and international agendas and policies on education and sustainable development" with regards to ESD (UNESCO, 2019d). Extensive synergies across the national level have been reported in Cyprus, Greece and Malta (sub-indicator 1.1.5, Figure 9). In Greece, the baseline for future ESD initiatives and actions are based on the UNESCO Global Action Plan on ESD, the UNECE Strategy on ESD, the Mediterranean Strategy for ESD and the Mediterranean Strategy for Sustainable Development. Actions in Cyprus and Malta share a similar baseline to that in Greece. Actions in Cyprus are further supplemented through a close cooperation between the UNESCO National Commission for ESD and the Cyprus Ministry of Education, Culture, Sports and Youth Focal Point for the Strategy. Additionally, Malta is a Global Action Plan (GAP) Partner in the "Transforming Learning and Training Environments Network" as a direct result of the UN Decade on ESD follow up. Turkey has not reported any national level synergies (Figure 9).

All four countries are member states to the Union for the Mediterranean (UfM), a Euro-Mediterranean intergovernmental organization that seeks to "enhance regional cooperation, dialogue and the implementation of concrete projects and initiatives with tangible impact" on the citizens of the Mediterranean (UfM, No Date). Since 2014, the 43 Ministers of the Environment of the UfM[14] unanimously endorsed the Mediterranean Strategy on ESD (MSESD). The Regional Strategy reiterates and reinforces the six key issues highlighted under the National Implementation Reports (referred to as objectives in the MSESD and presented with greater specificity on the Mediterranean context). Since 2016, the Mediterranean Committee on ESD, chaired by Cyprus, has acted as the body responsible for guiding and monitoring the MSESD and its Action Plan and decides on future alignments. It consists of the Ministries of Education of Croatia, Cyprus, Greece, Malta and Portugal, and the Ministry of Environment of Jordan, the UfM, United Nations Environment Programme Mediterranean Action Plan, the UNESCO Regional Bureau in Venice, the UNECE, and the League of Arab States.

The Regional Strategy on ESD provides a framework for implementation that can be applied across a broad geographic scale spanning multiple continents. However, countries that share a common region also "tend to have common education contexts," and thus such collective regional action towards ESD serve to significantly enhance the promotion, research and capacity-building related to ESD (MIO-ECSDE, 2018b).

As Cyprus, Greece and Malta are member states of the European Union, these countries have further re-enforced their commitment to the role of ESD as a critical driver of the SDGs through the European Green Deal (European Commission, 2019). As stated in the introduction (Section 1.1), international cooperation with regards to education, training and public awareness in Cyprus, Greece and Malta is further reinforced though each country's commitment to the Paris Agreement (UNFCCC, 2015). Turkey is not party to the Paris Agreement.

[14] Including both EU-Mediterranean and non-EU Mediterranean.

Again, it should be further recognized that ESD is also included in various other international agreements regarding sustainable development, such as the other two conventions signed in Rio in 1992, on biodiversity[15] and desertification[16], to which all four countries assessed are party to. ESD is also recognized in the Sendai Framework for Disaster Risk Reduction, and the 10-Year Framework of Programmes on Sustainable Consumption and Production (2012-2021).

3.2.2 Indicator 1.2

ESD Indicator 1.2 consists of 8 sub-indicators designed to assess the policy, regulatory and operational frameworks that support the promotion of ESD; it carries the same title description as *Issue 1* itself. When national averages across all sub-indicators within indicator 1.2 were calculated, it was found that a wide range of differences in implementation exist across Cyprus, (88%), Greece (75%), Malta (100%), and Turkey (62%) (Appdx. 3).

Sub-indicator 1.2.1

With regards to Sub-indicator *1.2.1 – Is ESD reflected in any national policy documents,* all four countries have all reported positively ("yes") and have presented a wide range national documents reflecting ESD – from 1 (Turkey) to 6 (Cyprus), to 9 (Greece) to 20 (Malta). Both Cyprus and Malta explicitly state that the number of documents listed is not comprehensive. The Maltese example is particularly interesting in that a wide range of documents (Appdx. 4) listed under sub-indicator 1.2.1 has been provided.

Sub-indicator 1.2.2

More specific than broad integration across policy, Sub-indicator 1.2.2(a) then inquires as to whether ESD is specifically addressed in relevant *national education legislation and/or regulatory documents*. All four countries have reported that ESD is addressed through national education legislation concerning early childhood, primary, lower secondary and upper secondary education (Sub-indicator 1.2.2(a) Appdx. 5). Beyond those levels, significant challenges have been discerned from the data. Only Greece and Malta have confirmed that ESD is addressed through national education legislation at the post-secondary non-tertiary level, and only Greece through post-secondary non-tertiary vocational education. Turkey does not have programmes at this level and data was therefore not available.

[15] The United Nations Convention on Biological Diversity (CBD); all four countries assessed in this report have ratified the treaty.

[16] The United Nations Convention to Combat Desertification (UNCCD) was adopted in Paris, France on 17 June 1994 and entered into force in December 1996. All four countries assessed in this report are signatories to the convention.

Regionally, no country has reported national educational policies that address ESD in either short-cycle tertiary or short-cycle vocational tertiary education (Sub-indicator 1.2.2(a) Appdx. 5). Nearly ten years ago, in 2011, short-cycle education was referred to as "the missing link" in Europe (EURASHE, 2011). In 2015, under the Bologna Process, European ministers embraced to a large degree the idea of shortening the duration of such programmes (Yerevan Bologna Conference, 2015). In 2018, short-cycle tertiary programmes were still reported as playing a minor role in national education systems across Europe – reported in only half of the European Higher Education Area countries (European Commission/EACEA/Eurydice, 2018).

Lastly, Cyprus is the only country of four to have has reported that national education legislation addressing ESD at the Bachelor's level exists. No country has reported national educational policies that address ESD at the doctorate level (Appdx. 5). The absence of national education legislation across ISCED levels 4-8 was therefore discerned.

For the purposes of this analysis, sub-indicator 1.2.2 was further broken down into its part (b) constituent, through which countries report whether ESD is addressed in national curricula and/or national standards, ordinances or requirements at all levels of formal education (Appdx. 6). Just as with national legislation, ESD has been reported as fully integrated across curricula by all four countries in early childhood, primary, lower secondary and upper secondary education. Cyprus, Greece and Malta have further reported that ESD is addressed in lower secondary vocational curricula. As with sub-indicator 1.2.2(b), Turkey has reported successful integration of the principles into the upper secondary vocational curricula but not for lower secondary vocational curricula as such programmes do not exist in the country. No data was available for secondary vocational levels of education in Cyprus.

At ISCED level 4 (post- secondary non tertiary education), Cyprus, Greece and Malta reported full inclusion of ESD across curricula. At ISCED level 4.5 (post- secondary non tertiary vocational education), Greece is the only country that has reported inclusion of ESD in curricula[17]. Cyprus is the only country to have reported inclusion at ISCED level 5 curricula (short-cycle tertiary education). No country of the four assessed in the report has reported inclusion at ISCED level 5.5 (short-cycle tertiary vocational education)[18]. In contrast to sub-indicator 1.2.2(a) which assessed integration across national education legislation, three countries – Cyprus, Greece and Malta – have reported that ESD is included at Bachelor's, Master's and doctorate level.

The Cypriot data[19] do not contain reference to the inclusion of ESD across ISCED levels 4.5 and 5.5 due to the use of the previous (2015) reporting template. However, the country's 2018 report highlights recent and on-going reform of TVET curricula which will place particular emphasis on sustainable development and the green economy. Such curricular reforms could stand as priority

[17] No data was available at ISCED 4.5 for Cyprus and ISCED level 4 programmes do not exist in Turkey.
[18] ISCED 5 programmes do not exist in Greece.
[19] The Cypriot 2018 National Implementation was completed using the 2015 template and data therefore reflect the above-described previous reporting system. Data was updated when explicitly stated in the country's 2018 informal report in addition to the 2018 National Implementation Report.

measures for other nation states within the Mediterranean, as the Cyprus Ministry of Education, Culture, Sports and Youth have determined that the "employability rate of post-secondary institutions of vocational education and training (PSIVET) graduates in some programs, which to a large extent relates with Sustainable Development, exceeds 85%, while employment rates of other young graduates with strong academic qualifications is estimated to remain at a lower level" (Republic of Cyprus, 2018b).

With regards to curricula, the clear lack of inclusion of ESD across ISCED levels 4 and 5 was again discerned across all four countries (Appdx. 6). Relative to ISCED levels 6-8, curricular integration of ESD was higher overall relative to policy. However, the integration of ESD across these levels in terms of both policy and curricula have the potential to offer significant benefits to the advancing the employability of graduates and can also contribute to upward mobility and lifelong learning.

Sub-indicators 1.2.3 – 1.2.7

Regionally, further success has been reported in all four countries with regards to addressing both formal and non-formal ESD across national policy (sub-indicator 1.2.3, Figure 10). Furthermore, three of four countries – Cyprus, Malta and Turkey – report that public awareness in relation to ESD is addressed in relevant national documents (sub-indicator 1.2.4, Figure 10). In Cyprus, for example, the 2018 report references ten initiatives across three ministries – the Ministry of Education, Culture, Sports and Youth through the National Action Plan, The Ministry of Health, and The Ministry of Agriculture, Natural Resources and Environment. The translation of more data-dense information on (e.g.) air quality into "kid-friendly" material has been highlighted in both formal and informal National Implementation Reports on ESD.

Greece and Malta have reported full implementation of ESD sub-indicator *1.2.5 – Does a formal structure for interdepartmental cooperation relevant to ESD exist in your government* (Figure 10). A formal structure can be defined as including "a joint commission/committee/working group with involvement of all relevant governmental institutions," and for its actions to occur "between state bodies (UNECE, 2018). In Greece, there has been and continues to be "a close regular informal cooperation on the matter between the Ministries of Education and of Environment and Energy" (Hellenic Republic, 2018). In Malta, the Directorate for Learning and Assessment Programmes facilitates a liaison among different stakeholders and across the ministries interested in ESD implementation. The Cypriot and Maltese approaches to interdepartmental cooperation are similar. In Cyprus, interdepartmental cooperation occurs through an intersectional committee, chaired by the Director of the Cyprus Pedagogical Institute, in which all the Directorates of Education participate with individual representatives, and representatives from other Ministries, as described in Section 1.1.3. No data was available for Turkey.

It is these above described mechanisms in Cyprus and Malta that permit multi-stakeholder cooperation – across but not limited to committees, commissions and working groups – on ESD

to exist through their respective governments (sub-indicator 1.2.6, Figure 10). In Cyprus, there is not one but two working groups in government – the above-described intersectoral committee through the Cyprus Pedagogical Institutes, and a second through the Ministry of Agriculture, Environment and Natural Resources. In both working groups, all the governmental departments, NGOs, Business, Scientific and Private Sector parties participate.

The economic situation in the Mediterranean is not homogenous, and funding for ESD initiatives varies depending on a country's unique social and economic situation. Sub-indicator 1.2.7 assesses whether public budgets and/or economic incentives are available to specifically support ESD (Figure 10). In Greece, funding for ESD initiatives primarily takes place across two funding channels – the Official Governmental Annual Budget and EU funds through the National Strategic Reference Framework (NSRF). These funds are then allocated into two ministries: The Hellenic Ministry of Culture and Sports and the Ministry of Education.

The 2018 Cyprus NIR cites two examples of EU-funded projects that have supported the promotion of ESD. The first project, CoDeS - School and Community Collaboration for Sustainable Development, was funded through the European Commission from 2011-2014, and carried on by the network of Environment and School Initiatives (ENSI). The aim of this project was to support collaborations between schools and their surrounding communities with a focus on sustainability, thereby improving students' motivation, deepening their knowledge in science and developing civic competencies. The Cyprus Pedagogical Institute, Frederick University (Cyprus), the National and Kapodistrian University of Athens (Greece) and the University of the Aegean (Greece) were active members of the project's Consortium.

The CoDes project has been particularly influential in Cyprus as it resulted in the organization of a Cypriot National Conference for Sustainable Schools, called "Schools and Community Collaboration" (CPI) in 2015, which then led to Schools' Sustainable Environmental Educational Policy (SEEP) (Affolter & Varga 2018). SEEPs allow individual institutions to refocus and reorient particular aspects of their ESD and environment education curricula and policies on the basis of their own needs and external environment. Through SEEPS, each school focuses on an issue that is of particular importance to them, and collectively, through the whole-institution approach, the school improves and optimizes their local situation.

In the national informal report, Cyprus has detailed a granting scheme. For the year 2018-2019, the Republic of Cyprus Council of Ministers has approved 65.000 euros (increased from 52.000 euros for the 2017-2018 year) which will be used in a school grant scheme. Schools which participate in the "Recycling Cooking Oils" initiative are granted up to 3000 euros for each, which must be used to implement actions described in the school's SEEP. In Cyprus there was a three-fold increase in funding from the 2010-2011 year, to the 2014-2015 year.

The second example provided in the Cypriot NIR was the "Agros TVET Hotel School." Through this program, participating schools invested project money to buy solar ovens, which are then used to train and educate students. Another supporting measure that implemented was in TVET schools for working more tentatively with Sustainable Development issues is the establishment of green technologies. For example, through the Grey Water Program, three TVET schools established systems for recycling grey water. Those technologies, apart from their uses for sustainable management of water in schools, are used as pedagogical tools for introducing students to green technologies and mainly to provide them with the necessary skills needed for green jobs. Finally, through the Governmental Network of Environmental Education Centers, students and teachers attend specific courses for Environment and Sustainable Development that support them to work more effectively with those issues (Republic of Cyprus, 2018b).

Figure 10. Responses to ESD sub-indicators 1.2.3 to 1.2.7 in Cyprus, Greece, Malta and Turkey, as per country's 2018 (third-cycle) National Implementation Reports.

In Greece, CoDes has had similarly positive results but through promoting the discussion in teacher and institutional settings of "Open Schools" (Affolter and Varga, 2018). Over 25 schools in Athens participate in "Open Schools" which provide and re-define school grounds as "meeting places and centers of action for the local community to take part in recreational, cultural, educational and sports activities" (City of Athens, 2018). However, Gkini, Gavrilakis & Flogaiti (2016) concluded that while local teachers understand and are positive towards such school-community collaboration under the "Open School" concepts, they specifically stated that a lack of *partnership management training* was hindering the success of the "Open School" concept. Greece has been and remains highly active in ensuring that SD is included in the training of educators, especially with regards to the whole-institution approach (See Section 3.4.3, Figure 13, 100% integration). Supplementing initial teacher training with partnership management training could provide educators with the capacity to confidently strengthen school-community collaboration, which could contribute to optimizing Greece's existing "sustainable schools" concept.

In summary, Cyprus, Greece and Malta have reported that public spending for ESD within mainstream government activity comes from both national budgets and European funding. No data was available for Turkey.

3.2.3 Indicator 1.3

National Sustainable Development Strategies were first proposed by the United Nations through Agenda 21 as a national "blueprint" for institutional change based on the "prevailing political, historical cultural, ecological circumstance" that are unique to each nation (UNCED, 1992). Cyprus, Greece, Malta and Turkey have all reported that their nation has a stand-alone "sustainable development", "global understanding", "international understanding" policy, plan or law in place, in each case using "sustainable development" language (Sub-indicator 1.3.1, Figure 11).

In Greece, "sustainable development" has been enshrined in the Greek Constitution (Art. 24) since 2001, wherein it states that "the protection of natural and cultural environment is an obligation of the state and every citizen is entitled to this right" (Hellenic Republic, 2018). It is therefore understood that the state should "take preventive or remedial measures according to the principles of sustainability" (Hellenic Republic, 2018). Furthermore, the National Growth Strategy for Greece adopted in May 2018 places heavy emphasis on education and training and is therefore strongly aligned with SDG4, and in particular SDG4.7. Across each of the strategic goals identified in the Strategy, which are structured around five operational priorities, the three-pillar approach to sustainable development is wide-spread, furthering aligning future developments in Greece across the remaining 16 SDGs.

Through the UfM, all four countries have adopted the Mediterranean Strategy for Sustainable Development (2016-2025).

Sub-indicator 1.3.2 inquires as to whether ESD part of said sustainable development policy(ies) if these exist (Figure 11). Cyprus, Greece and Malta have highlighted that a national strategy exists, and that ESD is recognized as a horizontal issue throughout. No data on whether Turkey has been able to integrate ESD into such policies is available. As ESD is an important tool for and a key enabler of sustainable development, its integration across sustainable development policies will serve to enrich and optimize the implementation of the Sustainable Development policy strategy itself.

While not explicitly reported in the NIR, in mid-2019, the Turkish government ratified the country's 11th National Development Plan (NDP) for the 2019-2023 period. The Turkish NDP is the short-term macro level policy plan for development which contains a holistic approach to implementation and monitoring of the SDGs throughout. It places heavy emphasis on increasing and diversifying external investment which will promote a competitive and productive industry. The World Bank has stated that the policy fully aligns with their Common Policy Framework's strategic orientation of growth, inclusion, and sustainability (World Bank, 2019). Through the NIR, Turkey has reported the Lifelong Learning Strategy Paper and Action Plan (2014-2018) as a stand-alone sustainable development policy, designed in relation with SDG4.

Figure 11. Responses to ESD sub-indicators 1.3.1 to 1.3.2 in Cyprus, Greece, Malta and Turkey. All data were extracted from 2018 (third cycle) National Implementation Reports on ESD.

3.3 Issue 2 - Promote ESD through formal, non-formal and informal learning

Under Issue 2 of the National Implementation Reports (NIRs), countries report on how ESD is promoted through formal, non-formal and informal learning. Issue 2 is composed of six indicators and twenty-four sub-indicators (Figure 12).

Figure 12. Summary of the indicators and sub-indicators addressed under the *Issue 2 – Promote ESD through formal, non-formal and informal learning,* as per the National Implementation Reports on ESD.

The second issue highlighted by the NIR assesses if and how countries promote ESD through formal, non-formal and informal learning. Overall, Greece is the only country to have successfully implemented all (100%) of the 24 sub-indicators associated with the six indicators (Figure 13). Both Cyprus and Malta have each successfully implemented two-thirds of the indicators (Figure 13). Turkey has reported successful implantation of 58% of all sub-indicators associated with Issue 2.

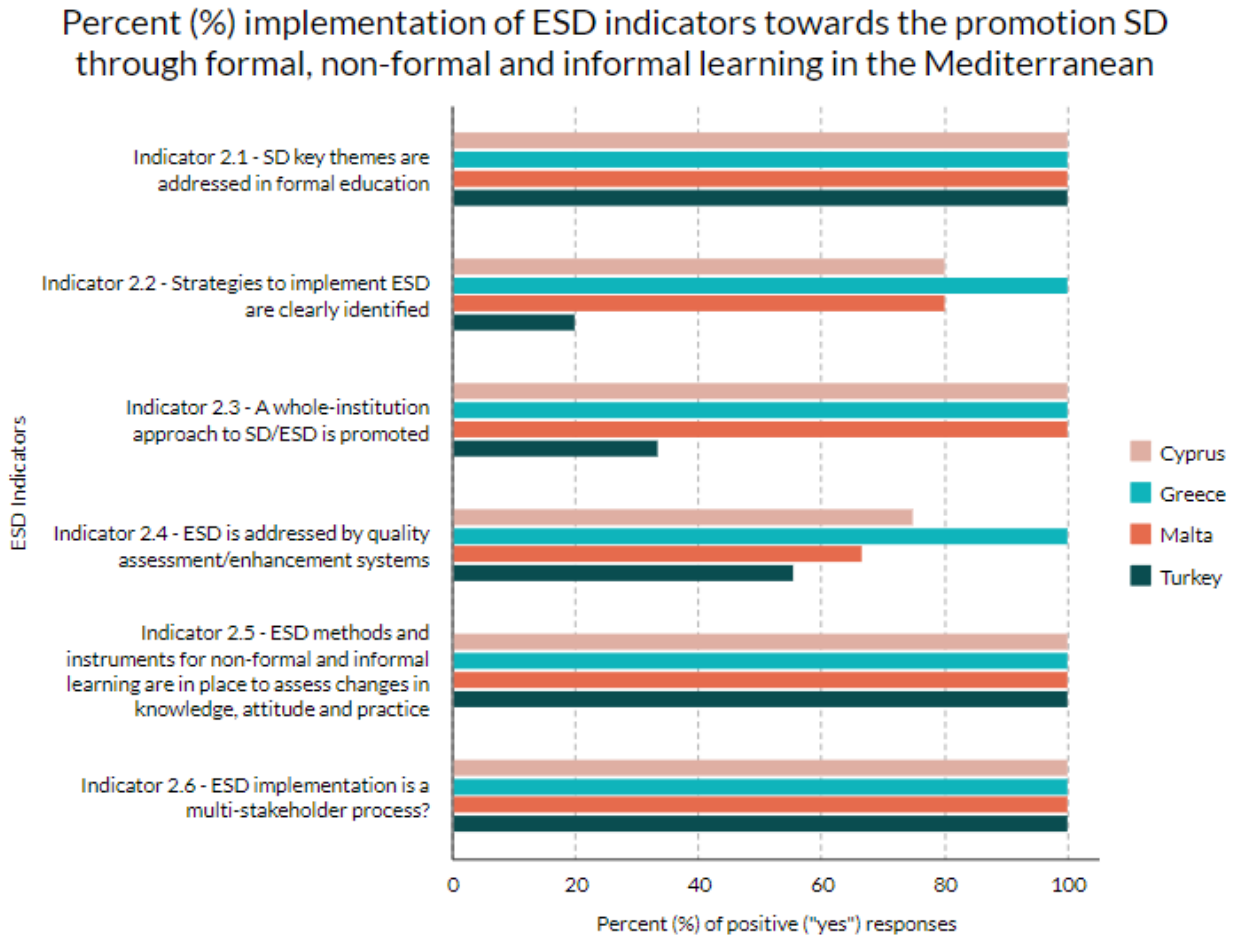


Figure 13. Percentage (%) of successfully implemented ESD sub-indicators under Issue 2, presented as the average number of positively ("yes") rated sub-indicators per indicator, as per the 2018 National Implementation Reports of Cyprus, Greece, Malta and Turkey.

3.3.1 Indicator 2.1

Indicator 2.1.1 assesses whether the key themes underlying sustainable development are addressed in formal education. The most recent reporting template lists 23 key themes and assesses them across thirteen ISCED levels. For sub-indicators in Issue 2, Cypriot averages were always calculated using the number of ISCED levels used in the 2015 reporting template. However, for sub-indicator 2.1.1, while 17 key themes were listed in the 2015 template, two of

the six new themes were added to the template list in the Cypriot NIR. For this reason, Cypriot averages were calculated over 19 rather than 17 or 23 key themes.

The overall integration of these 23 key themes was assessed (Appdx. 7). Countries showed a wide range of overall integration rates across the 23 key themes: Cyprus (86%), Greece (69%), Malta (86%) and Turkey (40%).

When data were grouped according to the overall percent integration across ISCED levels (Figure 14), a similar trend as in sub-indicators 1.2.1(a) and (b) was discerned. Specifically, high integration (>50%) of the key themes from all four countries has been reported in early childhood, primary, lower secondary and upper secondary education, with integration regularly reaching 100%. The largest paucities exist from post-secondary non-tertiary education, up until doctorate level. The integration of key themes of ESD into post-secondary, short-cycle tertiary education and tertiary education could be a critical contributor to national growth strategies in these four countries in the Mediterranean and should therefore receive their due importance in future curricular reforms.

As stated previously, Cyprus's 2018 National Implementation Report was conducted using the 2015 reporting template and therefore lacked inclusion of the six newly added themes on ESD: oceans and sea, renewable energy, sustainable cities and communities, sustainable lifestyles, gender equality, appreciation of cultural diversity and culture´s contribution to sustainable development. The 2018 NIR reports that the marine environment and tourism & transportation have been included across all nine levels of education listed in the 2015 reporting template, except for early childhood education. Inclusion of the four additional key themes across ISCED levels in Cyprus is therefore excluded from analysis in this section, and averages have been adjusted accordingly.

Cyprus has reported full integration of the 19 ESD themes[20] at Bachelor's level, Master's and doctorate level. Cyprus has also reported full integration of the 19 key themes listed in the 2015 reporting template in short-cycle tertiary education (ISCED 5). At primary and secondary education, Cyprus has reported and integration of 18 of the 19 themes (94%, each), with only economics – referred to as economic growth and good jobs in the 2018 reporting template – missing from curricula (Figure 11).

Of the nine levels of education reported on in the Cyprus NIR, early childhood education and post secondary non-tertiary education have the lowest rates of integration at 10/19 themes (53%) and 7/19 themes (37%) integrated, respectively. At both levels of education, peace studies, ethics and philosophy, corporate social responsibility and economics have not been integrated into the curricula. Early childhood education alone lacks the inclusion of five additional themes: ecological

[20] As per the previous (2015) reporting template used for the 2018 NIR, plus the two new themes (Marine Environment and Tourism & Transportation) reported in the 2018 NIR.

principles/ecosystem approach, climate change education, rural/urban development, marine environment and tourism & transportation.

Only seven key themes on ESD are integrated into the post secondary non-tertiary education curricula in Cyprus: environmental protection, ecological principles/ecosystem approach, natural resource management, climate change, marine environment and tourism & transportation.

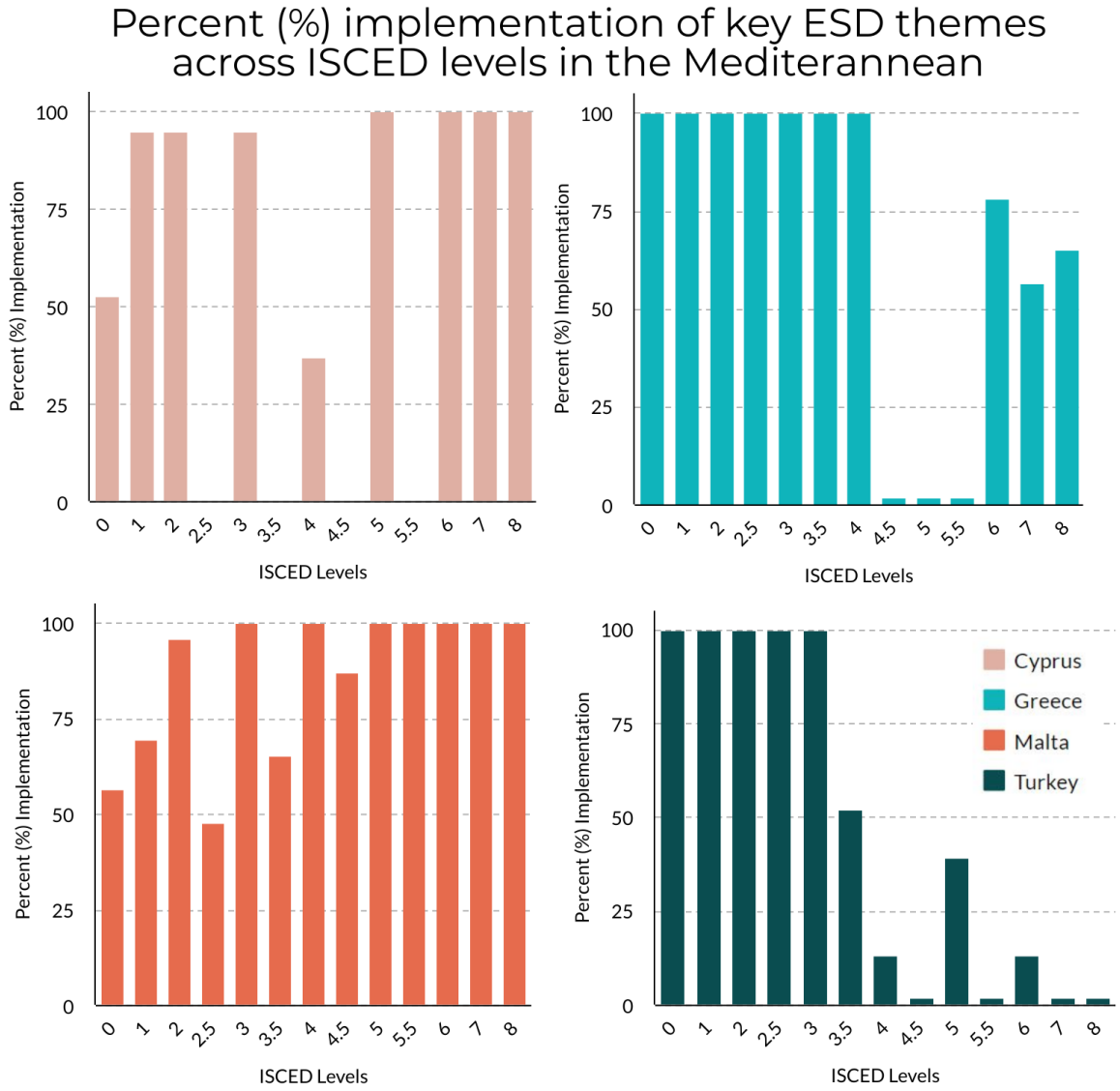


Figure 14. Overall percent (%) integration of 23 key ESD themes across 13 ISCED levels as per country's National Implementation Reports on ESD in Cyprus, Greece, Malta and Turkey. Data were extracted from sub-indicator 2.1.1 as per country's 2018 (third cycle) National Implementation Reports. Cypriot data were averaged over 19 key themes rather than 23 and across nine levels of education rather than 13, due to use of the previous (2015) reporting template rather than the 2018 reporting template.

Greece has reported full (100%) of the 23 key ESD themes across early childhood, primary, lower secondary, lower secondary vocational, upper secondary, upper secondary vocational and post secondary non-tertiary levels of education (Figure 14). However, themes across subsequent levels - post-secondary non-tertiary vocational, short-cycle tertiary and short-cycle tertiary vocational – have been reported at 0%. Rates of inclusion increase significantly beyond short cycle education. At Bachelor's level, 78% key ESD themes area integrated across courses, with the exception of cultural diversity, personal and family health, corporate social responsibility and culture's contribution to sustainable development. In summary, all possible environmental themes have been integrated into specific courses across the Bachelors' levels, but according to the data present in the NIR, Greece lags in integrating the cultural dimension of sustainability into tertiary courses.

At the Master's level, Greece has reported 56% integration across courses, and 65% at the doctorate level. In addition to the above-mentioned themes, poverty alleviation and sustainable lifestyles have been reported to have not yet been integrated across Master's and doctorate level. At the Master's level, environmental ethics and philosophy, global citizenship, democracy and governance, human rights and gender equality have also been reported as not explicitly addressed in the curriculum or programme of study.

Malta is the only country to have successfully implemented at least a percentage of the key themes of sustainable development at all ISCED levels. Malta also had the highest overall rate of integration among the four countries (Figure 14). Integration of key ESD themes in Malta presents the opposite trends of Greece and Turkey: rates of inclusion are lowest at early childhood and primary levels of education (56% and 70%, respectively) and increase towards 100% inclusion at upper secondary, post-secondary non-tertiary, short-cycle tertiary, short-cycle tertiary vocational, Bachelor's, Master's and doctorate levels of education.

In Malta, overall, the lowest rate of inclusion of the key themes is reported at lower secondary level (48%), where the following themes have yet to be integrated: peace studies, environmental ethics and philosophy, global citizenship, democracy and governance, human rights, poverty alleviation, ecological principles/ecosystem approach, natural resource management, corporate social responsibility, production and/or consumption patterns, economic growth and good jobs, rural/urban development and culture's contribution to sustainable development. At early childhood level, these results are similar except that global citizenship, democracy and governance, and poverty alleviation are included but climate change and desertification, and sustainable lifestyles are not. In Malta, the inclusion of climate change and desertification and sustainable lifestyles into formal curricula begins at the primary level. It has been reported that the primary curricula also includes environmental ethics and philosophy.

Integration of the key themes required for sustainable development such as production and/or consumption patterns, economic growth and good jobs, rural/urban development are present at upper secondary vocational but not lower secondary vocational. At post-secondary non-tertiary vocational education, ecological principles/ecosystem approach, natural resource management

(e.g., water, soil, mineral, fossil fuels) and peace studies (e.g., international relations, security and conflict resolution) are also absent.

As stated above, Malta is the only country to have successfully implemented at least a percentage of the key themes of sustainable development at all ISCED levels. However, the report states that the data were only based on a random sample of the learning outcomes framework, subject syllabi and course programmes, and thus true figures could be higher. While no formal curriculum audit has been done yet in Malta, UNESCO has developed the framework to permit such an analysis. In 2019, UNESCO released a new framework methodology designed to quantify the context in which such themes are addressed through assessment of the specific learning dimensions behind ESD education - cognitive, socio-emotional and behavioral (UNESCO, 2019b). The study highlighted that while there has been strong, global progress in terms of integration, the way in which these themes are addressed remains largely cognitive as the age of the learner increases. The results of the study should be considered, and the study replicated in countries currently undergoing curricular reform so that the operational framework behind ESD may reinforce and advance the socio-emotional and behavioral aspects of learning behind these critical key themes.

Turkey has reported full (100%) implementation of the 23 key ESD themes across early childhood, primary education lower secondary education and upper secondary education (Figure 14). This figure declines to 52% in upper secondary vocational education, 39% in short-cycle tertiary education and 13% in Bachelor's or equivalent level. In upper secondary vocational education (ISCED 3.5), ESD themes that have yet to be included in the curricula include peace studies, sustainable lifestyles, poverty alleviation, cultural diversity, ecological principles/ecosystem approach, personal and family health, corporate social responsibility, economic growth and good jobs, rural/urban development, oceans and sea, and culture's contribution to sustainable development.

Turkey, as with the other countries in the region, have a long history of implementing environmental education, first emerging in Turkish curricula after 1982 as a result of the environmental paradigm shift in global society, prompting increased awareness (Haktanır, Güler & Kahriman, 2016). As examined through the three-pillar approach to sustainability[21], Turkey has made the most significant progress with regards to environmental education but has struggled in expanding national curricula to comprehensively include the social and economic dimensions in sustainable education. However, a disproportionate emphasis of one pillar over the others creates instability within the system as a whole, resulting in a future that could be bearable but

[21] Alternate approaches to examining sustainable development which include additional dimensions such as cultural sustainability and geo-strategic security (among others) have been intensively debated since the release of the seminal report in 1987 by the Brundtland Commission popularizing sustainable development in the context of our common future. This report will frame the integration of ESD through the three-pillared lens.

not equitable, or equitable but not viable[22]. Through comprehensive integration across curricula and across all ISCED levels, ESD can serve to promote and advance the country's National Development Plan (2019-2023).

Sub-indicator 2.1.2

Skills, values and attitudes are the critical elements through which ESD ensures transformative action. These competences are assessed through sub-indicator 2.1.2 in National Implementation Reports. Country responses are clustered into four categories of competences – *learning to learn, learning to do, learning to be, learning to live and work together* – which are then assessed across the thirteen ISCED levels. Cypriot data was averaged across nine ISCED levels.

The overall percent (%) implementation was assessed (Appdx. 8) across the 23 sub-categories associated under the four categories of competences. Regionally, Cyprus and Malta have reported the highest rate of integration of the key competences (86% each), followed by Greece (61%) and Turkey (34%). Assessing the cumulative integration of the competences (and key sub-competences) across ISCED levels highlights that the same data paucity exists across ISCED levels as in previous sections (Appdx. 9).

Cyprus has reported the highest rate of integration (100%) of the learning competences across Bachelor's and Master's level (Appdx. 9). In Cyprus, the second highest rates of implementation (96%) have been reported across lower secondary, upper secondary, post secondary non-tertiary and short-cycle tertiary education. Primary and doctorate levels of education were reported as having integrated 76% and 74% if the competences respectively. The lowest rate of integration of the ESD competences in Cyprus was reported across early childhood education.

Greece has reported 100% integration of these key competences across secondary education, and secondary vocational education. The country has also reported 100% integration across post-secondary non-tertiary education (ISCED 4). Rates of integration in Greece across early childhood and primary education are high, at 78% and 91% integration, respectively. In Greece, integration of the key learning competences – *learning to learn, learning to do, learning to be, learning to live and work together* – has been reported as low across Bachelor's (52%), Master's (52%) and doctorate (39%) levels of education. Further integration of these competences into higher education institutions in Greece could provide the adaptive and dynamic professionalization of learners, enabling their smooth integration into the job market, or leading to the attainment of additional qualifications. ISCED 5 programmes do not exist in Greece and data was therefore absent for this level of education.

[22] Through the interpretation of the three-pillar approaches arises a stability model which posits that inclusion of only social and economic dimensions creates future scenarios which are equitable but neither bearable nor viable; scenarios which emphasize only social and environmental dimensions are bearable but not viable or equitable; and finally, scenarios which emphasize only the economic and environmental dimensions are viable but neither bearable nor equitable (Adams M. 2006).

In Malta, as in Cyprus, the highest rates of integration have been reported across Bachelor's, Master's and doctorate levels of education (100% integration each). Malta has reported full (100%) integration across an additional six levels of education: post secondary non-tertiary (ISCED 4), post-secondary non-tertiary vocational (ISCED 4.5), short-cycle tertiary (ISCED 5), and short-cycle tertiary vocational. In Malta, the rate of integration increases from early childhood (52%) to primary (65%) to lower secondary (83%) to upper secondary (91%). Integration across upper secondary vocation education is very high in Malta (87%) while lower secondary vocational education has been reported as the lowest across all levels of education (43%).

Turkey has reported that the key learning competences are fully (100%) integrated across primary and lower secondary levels of education, and nearly fully integrated (96%) across early childhood and upper secondary education. The lowest rate of integration was reported across upper secondary vocational education (35%). No data was available for other levels of education.

Most countries report relatively similar proportions of *Learning to learn, Learning to do, Learning to be* and *Learning to live and work together* with typically one outlier present per country (Figure 15). For example, in Cyprus, *learning to learn* occurring 16% more often than the other three competences, while occurring on average 8% more often than the other three competences in Greece. In Malta, competences contained within *Learning to learn* were reported to be 16% less integrated relative to other competences. In Turkey, all four categories of competences were reported at similar rates - between 30% – 35%, per competence.

Early childhood education held the lowest integration rate of the competences in Cyprus (65%), aside from those ISCED levels for which data was absent. In early childhood education, only one third (33%) of the key themes associated with *Learning to learn* are reported to be integrated across curricula. As Cyprus places strong emphasis on lifelong learning through national strategies and action plans, further emphasis of these competences across curricula would reinforce such habits, thus contributing to a knowledge-based society. Moreover, under the *Learning to be* category, *coping with stress* was absent from all levels of education except Bachelor's, Master's and Doctorate. The ability the deal with healthy amounts of stress and competition helps children "regulate stress in the future and develop a healthy attitude towards coping with stressful events in the future and avoid risky coping mechanisms" (UNESCO, 2019e).

Greece has reported over 80% integration of the key competences associated across ISCED levels 0-4 (Appdx. 9). At post-secondary non-tertiary vocational education, however, Greece has reported 0% integration[23]. At such ISCED levels, skill requirements are not easily definable, which means that, "shaping the educational curricula in accordance with industry is problematic" (Hasanefendic, S., et al., 2015). Thus, reinforcing and strengthening these competences could "facilitate industry collaboration, leading to practices that stimulate graduate employability and

[23] As stated earlier, there are no short cycle tertiary education programmes in Greece, and it therefore 0% integration across the two associated levels has been reported.

a large social acceptability and technical credibility of higher education" (Hasanefendic, S., et al. 2015).

In Greece, the second largest challenge of integration occurs at Bachelor's, Master's and doctorate level where the country reports an overall implementation rate of 62%. Competences associated with *learning to learn* are most deeply integrated at tertiary level – 100% at all three levels. Less conventional approaches to learning such as *learning to do* (33%), *learning to be* (25%) and *learning to live and work together* (28%) show lower average rates of integration relative to ISCED levels 0-4 (Figure 15).

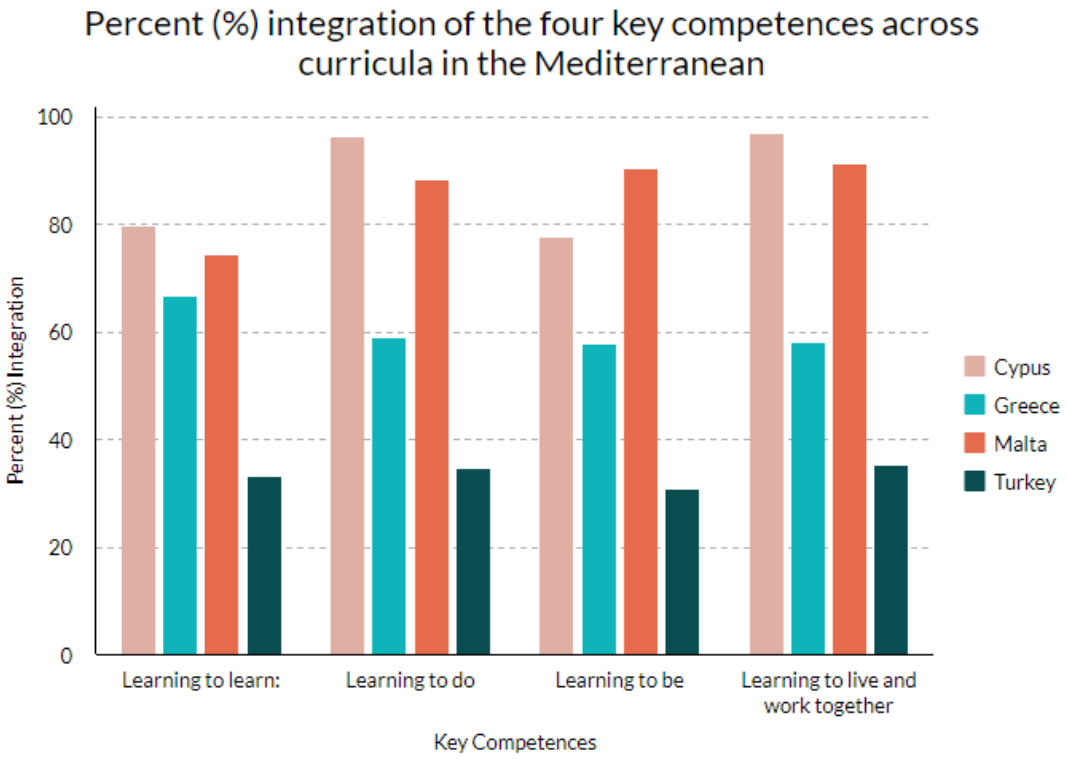


Figure 15. Relative total percent (%) integration of learning outcomes across the four categories of competences (*learning to learn, learning to do, learning to be, learning to live and work together*) as per country's National Implementation Reports on ESD in the Mediterranean, extracted from sub-indicator 2.1.2

Malta increases its rate of integration of all themes with increasing ISCED level. However, within the "learning to learn" competence, *Understanding Complexity & Systemic Thinking* and *Managing change & Problem-Setting* are only present at one level each (upper secondary and post-secondary non-tertiary education, respectively) before achieving full integration from post-secondary non-tertiary vocational education to doctorate level. Systems thinking, in particular,

is a powerful tool which could enable Maltese students to understand why things are the way they are. A greater focus on holistic understanding has been suggested as the most effective approach to analyzing and tackling the "wicked problems" of the world (Krause, 2012). Under *Learning to live and work together*, the competence of *negotiation and consensus-building* is not addressed for the first time in curricula until upper secondary education. Early, proactive exposure of these critical skills could serve to reinforce the independence and inter-personal skills of children and engrain the understanding of the link between action and consequence. Overall, for Malta, the greatest challenges for integrating these competences occur at lower secondary vocational education, where only 43% of these key competences are addressed through curricula (relative to the overall integration rate of 86%).

While Malta has the highest implementation rate among the four countries in the region, the country actually shows the lowest implementation rate at two of the 13 ISCED levels: early childhood education[24] (56%) and lower secondary vocational education (47%) (Appdx. 9). There has been increasing demand for pedagogically strong early childhood education (ECE) which can empower children to become agents of sustainable change and action. Infusing the key themes of ESD in children's everyday lives through formal education would reinforce their understanding of their role in the community and their contribution to sustainable development. The integration of the key competences of ESD at this level through a range of pedagogies should be given high importance "as the values, attitudes, behaviors and skills acquired in this period may have a long-lasting impact in later life" (UNESCO, 2018a).

3.3.2 Indicator 2.2

Sub-indicator 2.2.1 assesses whether ESD is addressed through: (a) existing subjects only; (b) a cross-curriculum approach; (c) the provision of specific subject programmes and courses; (d) a stand-alone project or (e) other approaches. It should be noted that the cross-curricular approach, for example, is more strongly recommended than other approaches (UNESCO, 2015). Under Annex II of the Framework for the implementation of Education for Sustainable Development (ESD) beyond 2019 (ESD for 2030), it has been stated that "despite its advocacy on a holistic and system-wide approach, when it comes to implementation, ESD tends to be treated as a thematic topic. This has to change and ESD has to outgrow its topical understanding and work more proactively at the systemic level as a part of SDG 4 on education, and Target 4.7 in particular" (UNESCO 2019c).

Each of these five components associated with sub-indicator 2.2.1 are assessed across the 13 ISCED levels, resulting in a potential 65 total responses. Country responses to this section were, on average, lower than other sections. Data was not weighted according to most preferred to least preferred methods and it should therefore be noted that the term 'integration rate' could

[24] As stated earlier, early childhood education is not compulsory in Malta.

therefore be misleading here, as a country may have chosen to implement some approaches over others.

When overall (total) percent implementation was calculated across all categories within sub-indicator 2.2.1, it was found that Cyprus showed the highest rate of integration (76%) but across eight rather than thirteen ISCED levels. Greece and Malta reported 52% and 54% integration, respectively and Turkey reported an overall rate of 8%. (Appdx. 10).

Section (a) of sub-indicator 2.2.1 reports whether countries address ESD through existing subjects, such as geography or biology. For higher education, "subject" means "course". Cyprus has reported that ESD is addressed through existing subjects across all levels of education except at the Bachelor's level. In Greece and Malta, this approach is also used at nearly all levels (85% and 92%, respectively, Appdx. 11). In Malta, ESD is not addressed through existing subjects at early childhood education, which is not compulsory in the country. No data was available for Turkey as to whether the country addresses ESD through existing subjects.

Addressing ESD through a cross-curricular approach is less common relative to addressing it through existing subject matter, indicating that there is still significant room for improvement across these selected countries in the Mediterranean (Appdx. 11), especially given the preference of the method relative to others. ESD, as addressed through a cross-curricular approach is highly integrated in Cyprus, included in all levels of education except post secondary non-tertiary education. In Greece and Malta the cross-curricular approach is employed across 7 of 13 ISCED levels, across primary, secondary and post-secondary education. Furthermore, the cross-curricular approach was not reported as being an approach used across short cycle tertiary and short cycle tertiary vocational levels of education in Malta[25]. In Turkey, ESD is addressed as a cross-curriculum approach across early childhood, primary, secondary and upper secondary vocational education (Appdx. 12). In summary, the greatest challenges in integrated the cross-curricular approach exist for three-quarters of the countries assessed at the following levels[26]:

Section (c) of sub-indicator 2.2.1 inquires as to whether ESD is address through the provision of specific subject programmes and courses. In Cyprus, this is done at all nine levels of education (100% as per the 2015 reporting template). In Greece and Malta, ESD is addressed through the

[25] The cross-curricular approach is also not integrated across early childhood education in Malta, which is not compulsory.

[26] ISCED levels 5 and 5.5 do not exist in Greece, but the cross-curricular approach has not yet been reported as integrated across Bachelor's, Master's or doctorate level in the country.

provision of specific subject programmes and courses in less than half of ISCED levels (46%, Appdx. 13). Greece has reported that ESD is addressed as such across early childhood, primary, secondary, lower vocational, and Bachelor's levels. In Malta, across ISCED levels 0-4 and sub-components, ESD is only addressed through the provision of specific subject programmes and courses at the upper secondary level. In contrast, it is addressed across all ISCED levels 5-8. No data was available for Turkey.

Across the four countries, addressing ESD through a stand-alone project (Sub-indicator 2.2.1 (d), Appdx. 14) was reported at similar integration rates as (c) the provision of specific subject programmes and courses. Cyprus, Greece and Malta have reported that stand alone projects on ESD are completed across early childhood, primary and secondary education. Greece and Malta have further reported that stand-alone projects on ESD are completed at lower secondary vocational level, and in Malta, also at upper secondary vocational level. Stand-alone projects are the second most common avenue through which to address ESD in Malta, present at 10 of 13 ISCED levels, but absent across short-cycle tertiary and short-cycle tertiary vocational levels. Lastly, Greece is the only country which has reported addressing ESD through other approaches (Sub-indicator 2.2.1 (e), Appdx. 15) (38%). Greece has reported using alternative approaches to addressing ESD across early childhood, primary and lower secondary levels of education. Overall, this approach to integrating ESD was the least common of five.

3.3.3 Indicator 2.3

The whole-institution approach to ESD seeks to include "sustainability principles in every aspect of school life" at an educational institution (UNESCO, 2017b). The approach considers the active involvement of all educational stakeholders within the institution itself – students, teachers and school staff – as well as family members and the broader community. This approach includes teaching content and methodology, school governance and cooperation with partners and the broader communities as well as campus and facility management. As stated under the *ESD for 2030* Framework (UNESCO, 2019c), the five priority areas (policy; education and training; educators; youth; and communities) as structured under the DESD and the GAP will be maintained for the following decade. The whole-institution approach (WIA) received repeated mention under the *ESD for 2030* Framework. With regards to Priority Action Area 2 on education and training, over the next decade, the whole-institution approach should be strengthened and emphasized "at all levels from early childhood to higher education and lifelong learning in communities" (UNESCO, 2019c).

Of these countries in the Mediterranean, all four have reported that the whole-institution approach is implemented throughout early childhood, primary and lower secondary education (Appdx. 16).

Overall, Cyprus has reported that this approach is integrated at five of nine levels of education (55%). As of 2018, the whole-institution approach has not yet been implemented across upper

secondary, post secondary non-tertiary, short-cycle tertiary levels of education or at the doctorate level. Of the four countries within the region, Cyprus and Greece are the first two countries to have implemented the whole-institution approach beyond secondary level.

As mentioned in section 3.2.2, the whole-institution approach in Cyprus is based on the obligatory planning and design of an institution's own Sustainable Environmental Educational Policy (SEEP) (Affolter & Varga, 2018). SEEPs allow individual institutions to refocus and reorient particular aspects of their ESD and environmental education curricula and polices on the basis of their own needs and external environment. Through SEEPS, each school focuses on an issue that is of particular importance to them, and collectively, throughout the whole-institution approach, the school improves and optimizes their local situation.

In Cyprus, all participants in the learning process (students, teachers, principals and the broader local community, among others) collaborate to select a sustainable development issue for further study and examination. Through this process, the guiding Sustainable Environmental Educational Policy is to address:

a. "the needs and the interests of students and teachers
b. the environmental problems faced by the school
c. the particular characteristics, problems and needs of the community in which the school is situated, and
d. the environmental issues which influence, in the short-term or in the long-term, the quality of life of people in a local and international level" (Republic of Cyprus, 2018a).

Institutions self-evaluate at the end of each school year and seek to highlight possible issues for further examination in the following year. In this case, the ''aim is not the control, the comparison and the comparative evaluation of schools, but the self-improvement of each school unit in the basis of sustainable development, respect, protection and conservation of the environment" (Republic of Cyprus, 2018a). Across higher institutions, for example, The University of Cyprus has adopted a Declaration of Environmental Policy, which highlights the commitment of the institution to integrating sustainability issues into all subjects, into waste management efforts and across the institution's infrastructure.

Of the four countries assessed, Greece shows the highest overall integration rate, having implemented the whole-institution approach at 8 out of 13 ISCED levels (62%). As of 2018, the whole-institution approach had yet to be implemented across post secondary non-tertiary or post secondary non-tertiary vocational education.

In Greece, the whole-school approach is promoted and assessed through biennial reports conducted by every school[27]. These local results of integrating ESD across the institution are summarized and passed through a number of entities. Reports start at each school and are then

[27] Planning and assessment of the educational work of the school, Article 47, Law 4547/2018

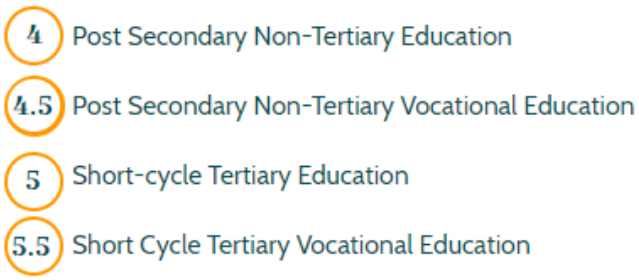
sent to their Regional Centres of Educational Coordination, from which summaries are sent to the Institute of Educational Policy (IEP), which then arrive as recommendations to the Minister of Education, Research and Religious Affairs. This is one approach to improving the programming and assessment procedures of the schools. Moreover, in Greece, every school is to adopt an ESD school plan by 2019, further emphasizing the whole-institution approach, as per the priority action areas of the UNECE Steering Committee on ESD, and the *ESD for 2030* Framework.

Across higher institutions, Greece is the first country to have implemented the whole-institution approach at Bachelor's, Master's and doctorate levels (Appdx. 16). As the activities of a university are extensive and diverse – from teaching, learning, research, engagement and living (e.g. on campus) – implementing the whole-institution approach regardless of level requires integrating the environmental, social and economic dimensions of sustainability into all activities at the institution. Specifically, the Charter of the Greek Universities for Sustainable Development (adopted by the Greek Universities' Rectors in 2011) is promoting the whole-institution approach at the Greek Universities.

To further promote ESD and the whole-institution approach, the Greek NGO, AEIFORUM, created "The Sustainable School Label," to award schools that promote sustainability. Certification is based on 40 indicators across three domains – Pedagogy, Social-Organizational and Environmental – which are assessed throughout the whole year by the school. Some of the activities required by the school include the creation of a Sustainable School Management Plan and School Activity Program.

Regionally, Malta is the only country to have implemented a "whole-institution approach" in lower secondary vocational training. As of 2019, the country has set the mainstreaming of vocational subjects in lower secondary as a key priority area under the reform "*My journey: Achieving through Different Paths"* which is inspired by the Strategy on ESD. The strategy was launched late 2016 and began implementation in 2019. According to the Ministry for Education and Employment, "The reform incorporates the philosophy of values-based education outlined in the *Respect for All Framework* and reflects UNESCO's four pillars of education: *learning to know, learning to do, learning to be, and learning to live together*" (CEDEFOP, 2017).

Lastly, as with the integration of key themes of ESD across ISCED levels, the whole-institution approach has yet to be implemented – in any country – across the following four ISCED levels[28]:



[28] ISCED level 5 programmes do not exist in Greece.

Integrating both the key themes underlying ESD and the whole-institution approach are important at these levels as they can serve to foster habits of lifelong learning and promote sustainable behaviors within society. In Malta, participation in upper secondary Technical and Vocational Education and Training (TVET) has more than tripled since 2000 (CEDEFOP, 2017). However, work remains to be done in reforming the curricula and approach at higher levels, as the Maltese Report *Vocational Education and Training in Malta,* states that many young graduates, especially among lower levels, are more likely to state that their skills do not match their job relative to graduates with academic degrees (CEDEFOP, 2017).

In 2019, 21% of the Cypriot workforce aged 15 – 64 had at best an ISCED 0-2 (Figure 16). This is greatly reduced from 2000, where 41% of the workforce has at best and ISCED 0-2, and from 2010, wherein 30% of the workforce has an ISCED 0-2 level education. In 2009, in Cyprus, public investment in education peaked at 7.2% of GDP – one of the highest levels in the EU and in the world (UIS, 2019). Public investment has remained consistently high, at 6.3% as of 2016 (UIS, 2019). As a result, in 2019, 40% of the Cypriot workforce had attained a tertiary level education (ISCED 5 – 8), 12% higher than the EU-27 average for the same level. The percentage of the Cypriot workforce with a tertiary level education has been steadily increasing from 22% in 2000, to 32% in 2010, to 40% in 2019. As of 2019, 38% of the Cypriot workforce had attained at best an

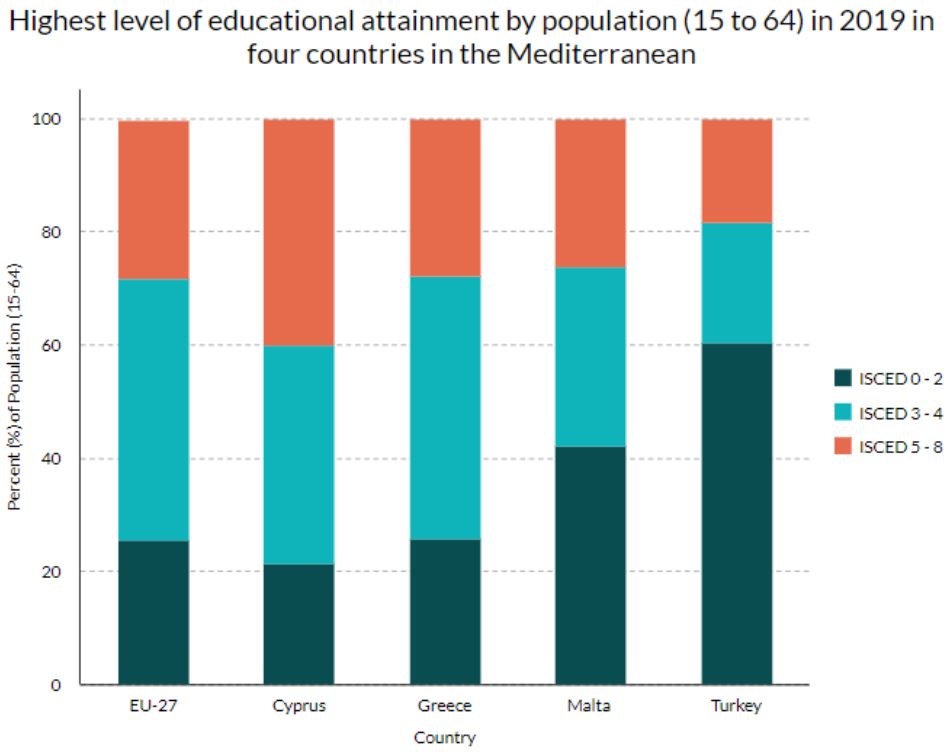


Figure 16. Highest level of education attained by population (%) in the Mediterranean, in 2018. ISCED Levels are as follows: ISCED 0-2 = less than primary, primary and lower secondary education; ISCED 3-4 = upper secondary and post-secondary non-tertiary education; ISCED 5-8 = tertiary education. Source: Eurostat, lfsa_pgaed [extracted on 04.03.2020].

ISCED 3-4 level education, lower than the EU-27 average (46%) due to the higher relative proportion of tertiary educated adults aged 15-64.

As of 2019, 26% of the Greek workforce had at best an ISCED 0 – 2 level education (Figure 16), reduced from 38% in 2010 and 48% in 2000. As of 2019, the Greek workforce shows highly similar proportions of educational attainment relative to EU-27 averages with regards to ISCED 0-2 (26% each), ISCED 3-4 (46% each) and ISCED 5-8 (28% each), only differentiating beyond decimal levels. From 2010 – 2018, the Greek economy shrunk one third as a result of the aggregation of structural problems cumulating in the debt crisis, resulting in a "brain drain" of their most educated citizens. The Greek people have suffered through rising taxes, falling wages, drastic public spending cuts and employment which reached highs of over 25%, as a result of the introduction of austerity measures upon which financial bailouts were contingent (Dassiou, 2015). Greek public spending on education reached its peak in Greece in 2009 (approaching 10 billion Euro) and has been declining ever since. However, investment in education as a proportion of GDP has been increasing since 2006 due (Papanikos, 2019). In the 2017 OECD report entitled "Education Policy in Greece: A Preliminary Assessment," it was suggested that further investment in education and training needs to be prioritized, "with attention being paid to the improvement of teaching quality and educational leadership, more emphasis on early childhood education and care, and directing resources to the neediest schools" (OECD, 2017).

In Malta, 43% of the workforce aged 15-64 has attained at best an ISCED 0-2 level education, relative to 32% of the population at ISCED 3-4 and 26% of the population having achieved a tertiary level education. Thus, the proportion of adults with, at best, an ISCED 0-2 level education (43%) is higher than the EU-27 average (26%), and the proportion of population having attained ISCED 3-4 is lower than the EU-27 average (32% vs. 46%, respectively). However, the proportion of Maltese adults with a tertiary level education approaches the EU-27 average (26% vs 28%, respectively. The structure of the Maltese workforce has changed markedly since 2000, when 79% of the Maltese workforce had at best an ISCED 0-2, 16% ISCED 3-4 and only 5% at ISCED 5-8. In the past twenty years, the greatest changes have been observed in the proportion of the adult population having attained tertiary education (26% in 2019), reflecting extensive investment in education and training (CEDEFOP, 2017). As the Maltese economy has continued to grow over the past years, employment as decreased and investment in education as a proportion of GDP has remained high relative to EU averages. However, "educational outcomes and attainment rates are generally lower in EU comparison [suggesting] some challenges in efficiency of spending" (EU, 2019).

The relative proportion of learners in Turkey having attained, at best, an ISCED 0-2 level has not decreased as steadily over the past decade relative to other countries in the region and remains significantly higher than in other four countries assessed (60% as of 2019, Figure 16). In 2019, educational attainment at ISCED level 3-4 in Turkey was recorded at 21% of the population aged

15-64, compared to the EU-27 average of 46% in 2019[29]. While the proportion of Turkish citizens having attained an upper secondary and post-secondary non-tertiary education has increased over the past decade at an average rate of 223 000/year (Appdx. 18), Turkey remains below the EU-27 average.

From 2013 – 2017, Turkey nearly doubled both the total budget allocated to TVET and the total budget per students, indicating significant progress towards advancing the quality of TVET (MONE, 2018). Furthermore, as Turkey has been defined by the International Monetary Fund as a stressed emerging market economy (IMF, 2019) functioning at low technological level (MONE, 2018). The country is "unlikely to get out of the middle-income trap" unless significant changes occur to methods, training and education associated with development, in particular with regards to sustainable, technology intensive production (MONE, 2018). The 2018 report, *Outlook of Vocational and Technical Education in Turkey* largely failed to mention the importance of integrating sustainability training into TVET education (MONE, 2018). As reported by Cyprus, and mentioned in earlier sections of this study, incorporating sustainability training into TVET has accounted for significantly higher employability rates among young graduates relative to those without.

Sub-Indicator 2.3.2

Sub-indicator 2.3.2 inquires as to whether there are there any incentives – guidelines, award schemes, funding, or technical support – that support a whole-institution approach to SD/ESD, including the implementation of ESD school plans. Cyprus, Greece and Malta have reported that such incentives exist, often in the form of sustainable certification across schools (among others) (Appdx. 20). Additionally, Cyprus, in supporting schools to adapt to a whole-institution approach to SD/ESD has created a supporting guidelines tool for schools in order to help them organize their School Unit on the basis of the whole-institution approach. A particularly important innovation for the promotion of holistic school approaches is the program "Tiganokinisi", which has been implemented in all schools in Cyprus since 2014 with the aim of making schools into recycling areas for frying oils in the community. Depending on the amount of frying oils collected by each school, there is a corresponding financial reward, which the schools are then obliged to use for the interventions and actions as determined by their unique and context-specific ESD school policy. The ESD school policies are designed on the basis of a holistic approach to make their school systematically sustainable, through appropriate interventions. Since 2014, 400 tons of used cooking oil have been collected from all participating schools and more than 600,000 euros have been returned to schools to be invested in green infrastructure and sustainable practices.

[29] For Greece: 44% and for Cyprus: 39%.

As with other indicators, these four countries have been particularly successful at offering incentives to encourage the adoption of the whole-institution approach across early childhood, primary, lower secondary and upper secondary levels of education. Only Malta reports that incentives exist for ESD from ISCED 4 onwards – available for learners at post-secondary non-tertiary and post-secondary non-tertiary vocational levels of education, and at Master's and doctorate level. Of the four countries in the region, no incentives have been reported to exist for short-cycle education or Bachelor's education. Creating incentives – guidelines, award scheme, funding, technical support – for higher levels of education (ISCED 5-8) could support innovative, localized methods which increase the match between skills gained through education and those demanded by industry. This could be materialized through the European Social Fund, as proposed in the European Green Deal, which proposes that "pro-active re-skilling and upskilling are necessary to benefits of the ecological transition" and to "enhance employability in the green economy" (European Commission, 2019). No data was available for Turkey for this sub-indicator.

Sub-Indicator 2.3.3

Whether formal or nonformal institutions develop their own SD/ESD indicators for their institution/organization is assessed through sub-indicator 2.3.3. UNESCO defined formal education as "education that is institutionalized, intentional and planned through public organizations and recognized private bodies and, in their totality" (UIS, 2011a). Thus, formal education institutions include schools, colleges, universities, etc. Just as with formal education, non-formal education is also institutionalized, intentional and planned, however the defining difference is that non-formal education "is an addition, alternative and/or a complement to formal education within the process of the lifelong learning of individuals" (UIS, 2011b).

In Cyprus, formal institutions have developed their own SD/ESD indicators at early childhood and primary levels. The responsible Unit of the Cyprus Ministry of Education, Culture, Sports and Youth has developed three types of SD/ESD indicators based on pedagogical, organizational/technical and social levels. These indicators have been developed to facilitate and support school's self-assessments on their Sustainable Environmental Educational Policy (SEEP). In Cyprus, SD/ESD indicators have not yet been developed by nonformal institutions (Sub-indicator 2.3.3b).

In Greece, SD/ESD indicators for formal institutions have been developed at all levels of education available within the country: from early childhood education (ECE) up to doctorate level (Excluding ISCED 5 as no such programmes exist in Greece, Appdx. 21). Greek institutions are also the first of the four countries in the region to have developed informal indicators for SD/ESD. In the National Implementation Report, Greece has reported that indicators have been developed by non-formal institutions at four levels: primary, lower secondary, lower secondary vocational and upper secondary.

Greece has further reported that, "In addition to "The Sustainable School Label," created by the Greek NGO, AEIFORUM[30], other networks and such as "The Sustainable School" and "Eco schools" serve to propose specific procedures for the development of each intuition's specific pedagogical, environmental and social indicators. Since the adoption of the SDGs (2015) the Mediterranean Information Office For Environment, Culture And Sustainable Development (MIO-ECSDE)[31], has, through its educational initiative MEdIES aligned its educational SD/ESD activities with the principles of the 17 Global Goals. MIO-ECSDE has run projects that have direct or indirect relation to SDG4, SDG6, SDG14, SDG15 and SDG17" (Hellenic Republic, 2018).

In Malta, formal institutions have developed SD/ESD indicators at the six levels from early childhood to secondary (including vocational education). Malta has reported that an official national database has not yet been developed, and therefore there is no data available on whether non-formal institutions develop SD/ESD indicators.

3.3.4 Indicator 2.4

As ESD embodies an overall educational paradigm shift, the processes through which it brings about change are complex and dynamic. In this regard, "Evaluation should not be used for 'quality control but for 'quality enhancement,' and must be dynamic to further account for the values, behaviors and emotions of both student and local community (Breiting & Mayer, 2015). The presence of criteria for ESD quality assessment or enhancement systems across the various ISCED levels in formal education, as well as in non-formal and informal education, is assessed through indicator 2.4.

With regards to education quality assessment/enhancement systems, (sub-indicator 2.4.1 (a)), Cyprus has reported that such systems are only available at early childhood and primary levels of education. However, those systems which do exist explicitly address ESD (sub-indicator 2.4.1 (b)) and exist at the national level (sub-indicator 2.4.1 (c)).

Greece and Malta have reported extensive assessment systems – available at 10 and 11 of the 13 ISCED levels, respectively (sub-indicator 2.4.1 (a), Appdx. 23). Malta has yet to implement or develop education quality assessment or enhancement systems for short-cycle tertiary and short-cycle tertiary vocational levels of education, and this level does not exist in Greece. With regards to quality assessment or enhancement systems, the same paucity exists as seen in indicator 1.2 (policies and curricula), indicator 2.1 (key themes and competences), and indicator 2.3 (the whole-institution approach), among others.

With regards to quality assessment and enhancement within tertiary education, an ongoing assessment of market and industry demands could ensure that competences obtained through

[30] See section 3.3.3 for more detail.

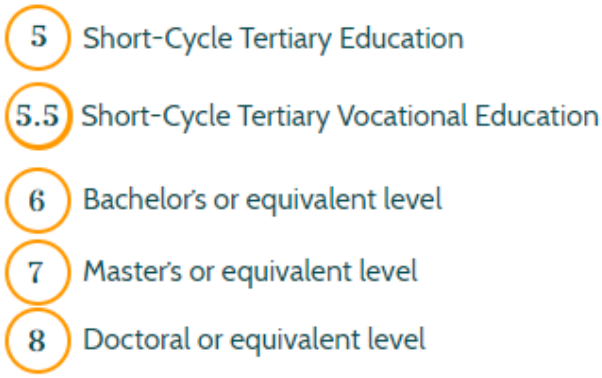
[31] The Mediterranean Information Office For Environment, Culture And Sustainable Development (MIO-ECSDE) is a technical and political instrument facilitating the intervention of NGOs in the Mediterranean for over 25 years.

education match those that employers need. Regionally, none of the three countries which have short cycle tertiary education programmes have yet to development education quality assessment or enhancement systems at those two levels.

With regards to early childhood education (ECE), Greece has successfully implemented a quality assessment system, but Malta has yet to do so, perhaps as ECE is not mandatory in Malta. Turkey has reported such assessment systems at early childhood, primary, lower secondary and upper secondary vocational education.

Those systems that explicitly address and examine ESD, as per sub-indicator 2.4.1 (b) are fewer (Appdx. 24). Most notably, none of Malta or Turkey's existing quality assessment or enhancement systems address ESD.

Cyprus and Greece have reported that assessment systems are in place that explicitly address ESD. In Cyprus, as stated above, this occurs at early childhood and primary levels of education. In Greece, such systems are in place from early childhood education to post-secondary non-tertiary vocational education. Thus, ESD quality assessment systems are lacking for at the following levels:



No data was reported for Malta or Turkey for 2.4.1 (b).

In Cyprus, Greece and Malta, quality assessment systems for ESD are implemented at the national level from early childhood and primary. Greece has further reported national systems at secondary and secondary vocational level, and Malta at secondary, secondary vocational, post secondary non-tertiary and post secondary non-tertiary vocational levels of education. Greece is the only country to have reported that a national-level quality assessment system for ESD at the Bachelor's level. Therefore, of the four countries assessed in the region, national-level quality assessment system for ESD are greatly lacking across higher institutions.

Sub-indicator 2.4.2

Sub-indicator 2.4.2 addresses whether (a) knowledge, (b) skills and competences (c) values and attitudes (d) behaviors available are currently reinforced or will be nationally reinforced in student assessments and examinations within the next five years, in relation to ESD. This indicator is assessed across the 13 ISCED levels of education. This question was absent from the 2015 reporting format and Cypriot data are therefore absent.

Within the next five years intentions towards reinforcing (a) knowledge, (b) skills and competences (c) values and attitudes, as learning dimensions, have been reported in Greece, Malta and Turkey, across early childhood, primary, lower secondary, upper secondary and upper secondary vocational levels of education (Appdx. 26 – 28). Malta is only country in the region that has reported plans at additional levels of education, extending plans to lower secondary vocational, post-secondary non-tertiary, post-secondary non-tertiary vocational, Bachelor's and Master's level.

Regionally, Greece is the first country with plans to reinforce the behavioral aspect of ESD through student assessments and examinations. Such re-enforcement will occur from early childhood education to upper secondary vocational education (excluding lower secondary vocational) (Appdx. 29). Behavioral change is at the core of ESD. Through student assessments which focus on this aspect, we can, in theory, assess whether ESD is fulfilling its role in society by closing the gap between sustainable intention and sustainable action. Assessing behavioral changes is undoubtedly difficult but can be reliably assessed through quantification of "intentions, habits and perceived control" (Klöckner, 2013). In this case, strengthening the partnerships between local civil society organizations or ASPNet Schools would permit the implementation of questionnaires assessing (for example) individual carbon footprint estimation and other sustainable lifestyle habits could be administered to provide baseline and preliminary assessments of ESD's success in closing the intention-action gap with respect to human survival and well-being.

3.3.5 Indicator 2.5

Indicator 2.5 within the National Implementation Report assesses whether ESD methods and instruments for non-formal and informal learning are in place to assess changes in knowledge, attitude and practice. It is composed of three sub-indicators, for which all four countries have reported full implementation.

Sub-indicator 2.5.1

For the first (sub-indicator 2.5.1), all four countries have reported that they address issues related to sustainable development in informal and public awareness-raising activities (Appdx 30).

In Cyprus, one of the main objectives of the Energy Agency is the systematic education and training of school-students in Cyprus. Since 2009, the Energy Agency has visited more than 258 schools of all levels of education, which has informed more than 31,933 students and 2,430 teachers on the topics of renewable energy, energy saving, sustainable transport and environmental protection.

Similarly, in Malta, public awareness campaigns and activities are deeply rooted in the activities of the National Ministries. In Malta, this includes the Ministry for Education and Employment (MEDE), the Ministry for the Environment, Sustainable Development and Climate Change (MESDC), the Ministry for Transport and Infrastructure and the Ministry for Tourism.

Regionally, the long-standing MEdIES (Mediterranean Education Initiative on Environment and Sustainability) initiative of MIO-ECSDE[32], has run "a systematic campaign about Non-Conventional Water Resources which includes teaching material for teachers and students, school interventions, and a contest that were designed based on the principles of ESD (being holistic, learner-centred, hands-on, promoting critical thinking etc). In its 10-year lifespan, the campaign reached 35,000 students and 5,200 teachers in Greece. The campaign was also implemented in Cyprus, Italy and Malta[33]" (Hellenic Republic, 2018).

In Greece, the process of increasing public awareness has achieved deep horizontal integration and involvement across various ministries at the national level. These activities are implemented through a decentralized approach. For example, in Greece, there are 446 Natura 2000 sites, managed by 36 Management Bodies. All of these sites "have environmental education centers that target school students of all ages and help translate, though practical training, overall stainable development objectives down to the local level" (Hellenic Republic, 2018). This is one such example of many initiatives of the Ministry of Environment and Energy with regard to education on environmental and biodiversity protection. In total, over 20 examples of increasing public awareness in Greece are available in the National Implementation Report.

Moreover, Cyprus, Greece and Malta have ratified the UNFCCC[34] Paris Agreement, under which parties have committed to lowering greenhouse gas emissions to keep global warming well below 2^{o}C, as well as cooperation "in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps with respect to enhancing actions under this Agreement" (UNFCCC, 2015). Turkey has yet to ratify the Paris Agreement.

In Turkey, increasing public awareness is enshrined as the first priority of the country's *Lifelong Learning Strategy Paper and Action Plan (*2014-2018). The first priority addresses three main

[32] The Mediterranean Information Office For Environment, Culture And Sustainable Development.
[33] More information available online: http://medies.net/staticpages.asp?aID=657
[34] United Nations Framework Convention on Climate Change (UNFCCC)

channels through which public awareness can be increased: public broadcasting programs (TV, radio), visual and printed media, and “learning festivals” (Republic of Turkey, 2018).

Sub-indicator 2.5.2

Work-based learning may foster integration of the principles of sustainability into the whole of society through opportunities such as internships, apprenticeships, work-placements and in-service sectoral training. The extent to which support is provided to small companies, farmers, trade unions, associations for work-based learning which addresses issues related to sustainable development is addressed in sub-indicator 2.5.2. All four countries have reported that support exists for work-based learning related to sustainable development (Appdx. 30).

Opportunities for work-based learning must be ensured to be high-quality, meaningful and fully aligned with the needs of industry. Work-based learning is seen as most effective paired with prior exposure to education for sustainable development, however, work-place trainers themselves must also be able to meet the needs of both industry and sustainable development (Richard, Taylor & Nathan, 2003). Greater cooperation and collaboration among government, industry, the non-formal education sector, and civil society organizations may be beneficial for creating alternative pathways to lifelong learning for youth and adults.

Sub-indicator 2.5.3

All four countries have reported that instruments such as research, surveys, and etc. have been put in place to assess the outcomes of ESD as a result of non-formal and informal learning (sub-indicator 2.5.3, Appdx. 30).

3.3.6 Indicator 2.6

Indicator 2.6 assesses whether ESD implementation is a multi-stakeholder process. The inclusion of the seven types of stakeholders listed in the reporting format – local government, NGOs, private sector, organized labour, media, community-based and faith-based organizations – is critical to ensure that ESD implementation is as inclusive and participatory as possible. Participation should occur across formal, non-formal and informal institutions. Formal and non-formal institutions are defined in Section 3.3.3, sub-Indicator 2.3.3. Informal learning or education through informal institutions occurs through a wide range of activities in one’s daily life. It is a lifelong process that is self-directed and non-structured but may or may not have been incurred incidentally or through socialization.

The four countries assessed in the study present varying degrees of stakeholder engagement (Figure 17). In Cyprus, stakeholder involvement in formal education has been reported across

five of seven listed stakeholders but not implemented through organized labour nor faith-based organizations. However, unlike formal institutions, organized labour organizations are involved in the non-formal implementation of ESD implementation (6/7 organizations, 86%). Five of seven informal institutions are involved in the implementation of ESD, with the exception of organized labour or faith-based organizations. As the data has shown thus far, there have been significant regional challenges with regards to implementing ESD across TVET. The involvement of such organized labour organization is critical to ensure that the values, skills and behaviors obtained through TVET are reconciled with those labour organizations and the labour market itself.

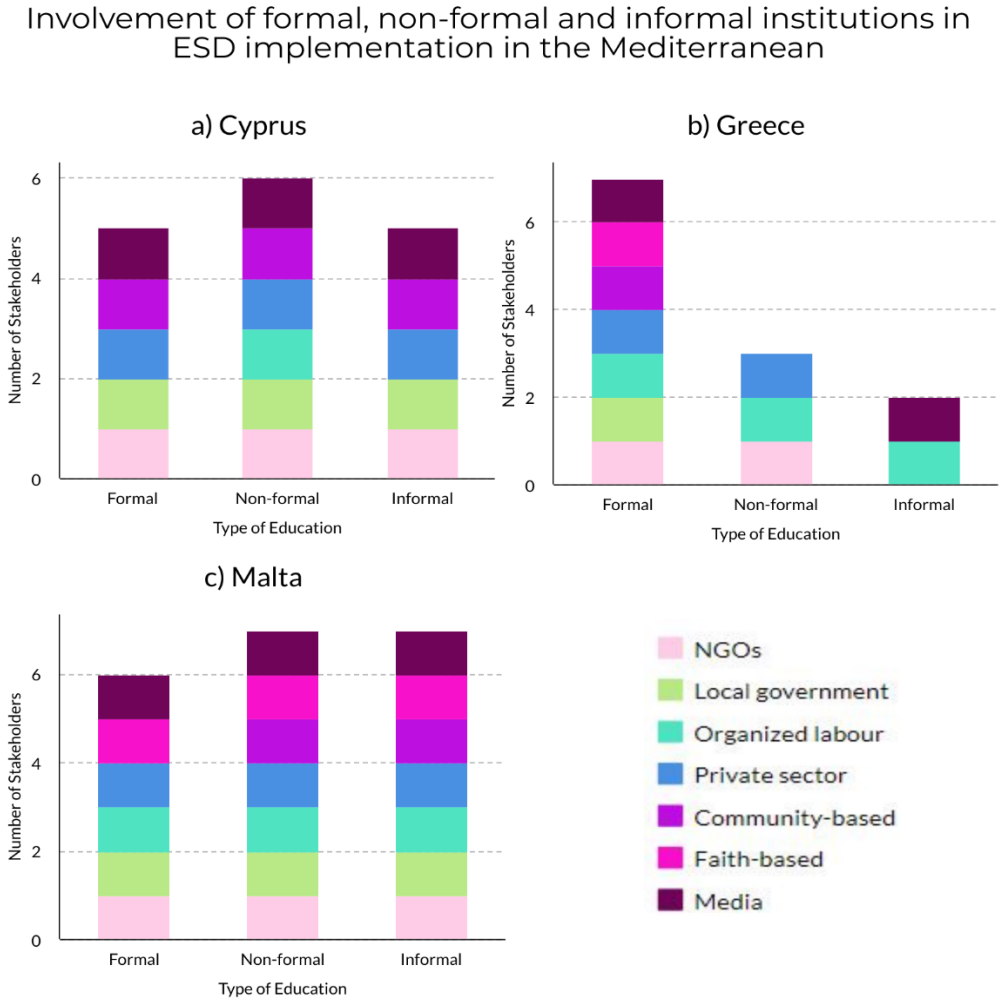


Figure 17. The involvement of formal, non-formal and informal institutions in ESD implementation across Cyprus, Greece and Malta. Under the National Implementation Reports, countries reported on the involvement of seven stakeholders – local government, NGOs, private sector, organized labour, media, community-based and faith-based organizations. No data were available for Turkey.

In Cyprus, the inclusion of faith-based entities and their leaders could serve to enhance the inclusivity of ESD. Faith-based organizations and their leaders have applied their values, principles and actions to long ensure that no one is left behind. As such, their participation in ESD

implementation could enhance broad identification with sustainable development issues, deepen social responsibility with environmental issues and facilitate collective action.

Greece reports the highest rate of involvement – seven of seven stakeholders involved in ESD implementation – across formal institutions. However, Greece also reports the lowest rate of stakeholder involvement across non-formal and informal institutions. With regards to non-formal institutions, three types of stakeholders are involved in the implementation of ESD: NGOs, organized labor and private sector organizations. With regards to informal institutions, the multi-stakeholder approach involved by two of seven educational stakeholders: organized labor organizations and the media.

The Greek NGO, "ActionAid" organized the "Student Action Week: Planet 2030" campaign, successfully mobilizing 35 000 students in the capital. The week of action involved "activities, workshops, concerts, dancing, projections, gardening and talks," all of which were supported through the underlying theme of education for sustainable development (ActionAid, 2018). In 2018, ActionAid provided 2,653 hours of educational programs and seminars.

Furthermore, communication campaigns run by the Hellenic Ministry of Culture and Sport since 2008[35] for example, include deep horizontal integration and cooperation across at least three other ministries, as well as involvement of the six remaining stakeholders, as stated in previous sections.

Malta has reported the highest overall rate of stakeholder involvement across formal, non-formal and informal institutions or organizations (Figure 17). With regards to formal institutions, Malta has reported 100% stakeholder involvement across non-formal and informal institutions but has yet to involve formal community-based organizations into the ESD implementation process.

While Turkey has reported that a multi-stakeholder process exists, no data regarding the extent of inclusivity was available. With regards to TVET, Turkey has reported that the Directorate General for Vocational and Technical Education in Turkey has signed 92 cooperation protocols with 102 institutions.

Sub-indicator 2.5.2(b)

Under the UN Decade on ESD, UNESCO has defined five key objectives or approaches of the aforementioned education stakeholders: social learning, training, re-orienting education, quality education and public awareness. The involvement of stakeholders with these objectives in ESD implementation is assessed across the following groups of stakeholders: local government, NGOs, private sector, organized labour, media, community-based and faith-based organizations (Sub-indicator 2.5.2(b), Figure 18).

[35] Awareness campaign with the focus of Environment and Culture since 2008 and Green Cultural Routes since 2012.

In Cyprus, organized labour and faith-based organization are not involved in any of the five types of education stakeholder under the UNDESD: social learning, training, re-orienting education, quality education and public awareness. Media is only involved across public awareness and social learning. NGOs and local governments are involved in all five.

In Greece, public awareness related to ESD has been reported to have the highest implementation across stakeholder groups but has not yet been implemented across organized labour and private sector organizations. In Greece, both quality education and re-orienting education have been reported only across local government.

Malta has reported that two types of education stakeholders – social learning and public awareness – are fully addressed by all seven groups of stakeholders. However, ESD training in Malta has yet to integrate community-based or media-based organizations. Conversely, quality education and re-orientating education are only addressed by NGOs and Media. No data was available for Turkey.

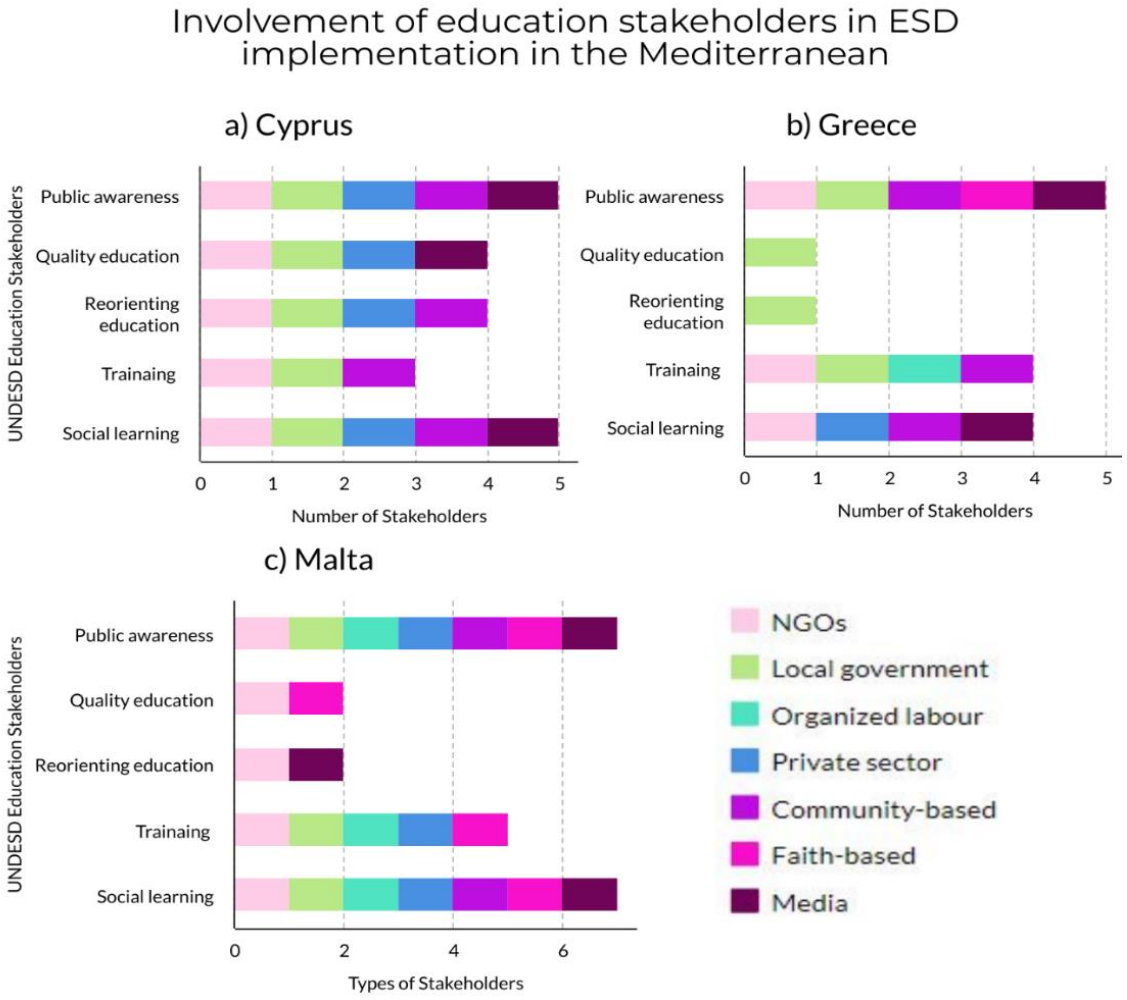


Figure 18. Number and types of educational stakeholders involved in ESD implementation across Cyprus, Greece and Malta as per the country's 2018 NIR reports. No data were available for Turkey.

3. 4 Issue 3 – Equip educators with the competence to include SD in their teaching

Issue 3 within the National Implementation Report framework assessed whether educators are equipped with the competences required to include ESD in their teachings. It is composed of two indicators and five sub-indicators. For this section, no data were available for Turkey (Figure 19).

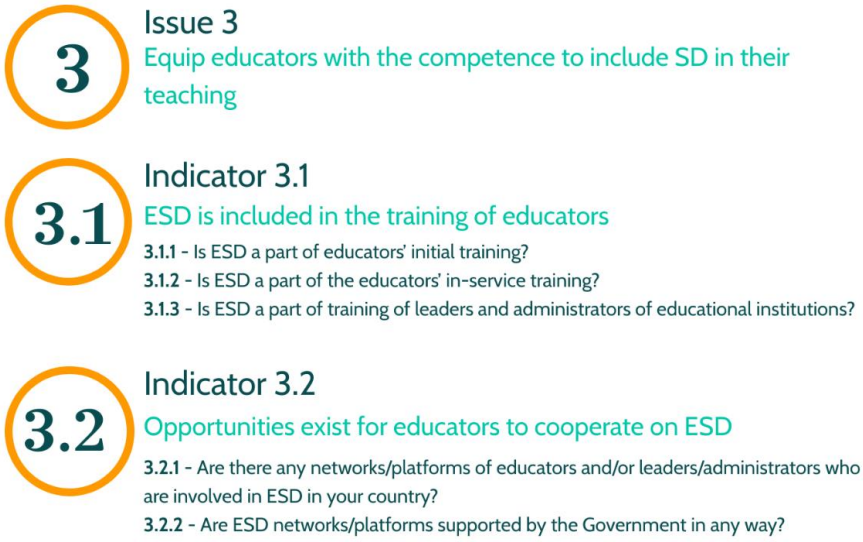


Figure 19. Graphical summary of the indicators and associated sub-indicators addressed under the ESD *Issue 3 – Equip educators with the competence to include SD in their teaching* as per the National Implementation Reports on ESD.

3.4.1 Indicator 3.1

If ESD is to be integrated across all levels of education, then ESD must also be included in the pre-service (sub-indicator 3.1.1) and in-service training of educators (sub-indicator 3.1.2), and in the training of leaders and administrators of educational institutions (sub-indicator 3.1.3). The percentage of educators and administrators reported as having received such training as per the NIR Reporting template is presented in the report as a range (Table 1).

Percentage of educated trainers	0-5%	6-10%	11-25%	26-50%	51-75%	76-100%
Scale	A	B	C	D	E	F

Table 1. The scoring key for the NIR indicator 3.1, which assesses the percentage of educated trainers across a country. This scoring key is applicable to sub-indicators 3.1.1 (initial training), 3.1.2 (in-service training) and 3.1.3 (in-service training of leaders and administrators).

Cyprus has reported the highest rate of initial training, in-service training and administrator training on ESD of all four countries in the region. With regards to initial training, Cyprus has reported that between 76% to 100% of educators receive initial training on ESD, at nine of nine (100%) ISCED levels assessed. With regards to in-service training on ESD, Cyprus has reported similarly high numbers (between 76-100%) at seven of nine ISCED assessed which falls to 51-75% at Master's and doctorate. For example, in Cyprus, a "cross-departmental postgraduate program on Education for the Environment and Sustainable Development, addressing a variety of professionals (including educators who wish to integrate SD in their professional practice) has been offered by the Frederick University since 2009" (Republic of Cyprus, 2018).

In Cyprus, the role of both teachers and principals in ensuring the sustainable school has been emphasized since the 2007 National Action Plan for Environmental Education. As a result, between 76-100% of educators across ISCED 0-3 (excluding vocational) receive in-service training on ESD. Beyond secondary education (ISCED 5-8), it has been reported that 51-75% of administrators receive in-service training on SD. By re-enforcing the role of principals and administrators as sustainable leaders, principals themselves can encourage inclusion of ESD across curricula and activities, support the transition towards a holistic, whole-school approach to ESD, and facilitate the re-focusing of educational aims (Kadji-Beltran, Zachariou, & Stevenson, 2013). In 2013, Cypriot primary school principals reported a "lack of confidence in administrative skills for sustainable schools, limited willingness to challenge the status quo and limited frequency of engaging in actions important for supporting ESD activities, such as encouraging networking with external groups, as well as contextual features of national educational policy" (Kadji-Beltran, Zachariou, & Stevenson, 2013).[36]"

In-service training of administrators could therefore support the dissolution of both individual and institutional barriers hindering effective ESD implementation. In the 2018 National Implementation Report, Cyprus has reported that "ESD training is compulsory for newly appointed primary and secondary education school principals, wherein principals are introduced to the basic principles and aspects of ESD, to the concept of the sustainable school and the way of planning and implementation of ESD School plans. However, particular importance is attached to the area of leadership and sustainable schools, since the role of principals is crucial for creating sustainable school" (Republic of Cyprus, 2018).

In Greece, ESD, as a part of educators' initial training across ISCED 0-3 is mandatory as per the Ministry of Education and the IEP strategic plan. ESD principles, methods, and teaching tool is available as a part of in-service training but is optional. In Greece, seminars for teachers are organized by Centres of Environmental Education at the Bachelor's and Master's level, and by

[36] A replication of the above-mentioned study could be suggested in the four countries assessed in the present report. A replication could be suggested at higher levels to highlight the challenges of administrators across ISCED 4-8, where in-service training presents the larger paucities than across ISCED 0-4.

Coordinators of Environmental education (recently renamed as Consultants of ESD) at the directorate level.

In Greece, under the framework of the UNESCO ASPnet Pilot Project, "Whole school approach to Climate Change" the school head and facilitators of participating schools from the Hellenic network followed two national training workshops. This project was mandatory for the 15 participating schools but there are plans to replicate workshops with other school-members of the national network.

In Malta, between 51-75% of educators across ISCED levels 0-3 (including lower secondary (2.5) and upper secondary vocational (3.5)), and ISCED 5 (including vocational) receive initial training on how to integrate ESD into their practice. At the Bachelor's level, this figure increases from between 76-100%, but declines at Master's and doctorate level to between 51-75%. Educators in Malta at post-secondary non-tertiary vocational level receive the lowest amount of training on how to integrate ESD in their practice, with only between 11 to 25% receiving initial training (Appdx. 31). Pre-service training for educators on ESD is offered through the Centre of Environmental Education and Research (CEER) and is mandatory, with additional, optional training available.

While initial teacher training is comprehensive across ISCED levels in Malta, in-services training drops to 26-50% from ISCED 0-3 (including vocational) (Appdx. 32). From ISCED 4 (post-secondary) and beyond, only between 6-10% of Maltese educators are receiving in-service training on how to integrate ESD into their practice. At the Bachelor's level, this range increases to 26-50%, but returns to the range between 6-10% at Master's and doctorate level.

For these countries, ESD is deeply integrated across compulsory and secondary education, not only in training as noted above, but across many of the preceding indicators. However, throughout the report this has not been the case for TVET, short-cycle tertiary and tertiary education. In Malta between 6-10% of educators across ISCED levels 4-5 receive in-service training on ESD. In-service training on ESD is important because it can play a key role in reducing the perceived barriers to implementing ESD in the classroom, thus ensuring that all learners receive a sustainable education.

As school principals and administrators are critical to the successful implementation of ESD, a lack of support for ESD initiatives would present a significant institutional barrier. The lowest levels across indicator 3.1 were reported within in-service training for administrators (sub-indicator 3.1.3, Appdx. 33). In Malta, while initial and in-service training is comprehensive across ISCED levels[37], administrator training drops to 11-25% from ISCED 1-3 (including vocational). At ISCED 0 and from ISCED 4 (post-secondary) and beyond, only between 6-10% of Maltese administrators are receiving in-service training on how to integrate ESD into their practice.

[37] With the exception of post-secondary non-tertiary vocational education, where only 18% of educators receive initial training in ESD.

3.4.2 Indicator 3.2

Indicator 3.2 assesses whether opportunities exist for educators to cooperate on ESD. It consists of two sub-indicators. Cyprus, Greece and Malta have all reported that networks of educators and/or administrators who are involved in ESD exist (Sub-indicator 3.2.1, Appdx. 41). Each of the three countries has institutions within the UNESCO's Associated Schools Network (ASPnet). The ASPnet Strategy for 2014-2021, "Global Network of Schools addressing Global Challenges", identifies Education for Sustainable Development as one of its two priorities. All three countries are also active through the MEdIES online network, and through their respective Eco-Schools networks.

Furthermore, it should be noted that Cyprus has three networks/platforms for ESD at the national level. The first network was created by teachers who participate in the network of the governmental environmental education centres. These teachers, through their participation in the work done at the environmental education centre, connected with the personnel of the centres and with colleagues from various districts, hold three-day long meetings, four times a year to exchange good practices, successes and their thoughts and ideas about the way that they introduce non-formal education to their school practice. The second network is related to the reformed national curriculum and how ESD will be introduced to school practice. Teachers from all levels of education attend the training courses for ESD/EE and national curriculum, and then operate as coordinators and facilitators for their schools. Teachers in this network also act as the liaison between their schools and the supporters/counsellors from the Unit of EESD and the Ministry of Education and Culture. The third platform was developed for the project Thganokinisi. At the end of each school year, all the schools that participate to the program (thus far, 350 schools from all educational levels) upload useful tools and sustainable practices based on their Sustainable Environmental Education Policy to this online platform. This platform provides great opportunities for schools to share ideas and learn from each other on how to make their school sustainable.

Funding for such initiatives described under sub-indicator 3.2.2 is typically joint national and EU-sourced funding. No data was available for Turkey.

3.5 Issue 4 – Ensure that adequate tools and materials for ESD are accessible

Under Issue 4 as defined by the National Implementation Reports (NIRs), countries report on whether adequate tools and materials for ESD are accessible. Issue 4 is composed of three indicators and eight sub-indicators (Figure 20).

Figure 20. Graphical summary of the indicators and associated sub-indicators addressed under the ESD *Issue 4 – Teaching tools and materials are produced* as per the National Implementation Reports on ESD.

3.5.1 Indicator 4.1

The first sub-indicator under indicator 4.1 assesses whether a national strategy or mechanism to encourage the development and production of ESD tools and materials exists (sub-indicator 4.1.1, Appdx 34). In Cyprus and Greece, such a strategy exists. A strategy has not yet been implemented in Malta. No data exists for Turkey.

In Cyprus, the Department of Agriculture, the Forest Department, the Department of Environment all encourage the development of tools and materials on ESD through the MANRE[38]. MANRE has developed and printed a great variety of leaflets and other material which interest not only farmers but other stakeholders as well. Additionally the unit of EESD has established groups consisting of experienced teachers, inspectors, counsellors and scientists on ESD that are employed on an annual basis to produce educational material on SD issues that are of priority for

[38] Ministry of Agriculture, Natural Resources and Environment in Cyprus (MANRE)

both Cyprus and the Mediterranean Region, taking into consideration the particularities of the Cyprus Educational System.

In Greece, Institute for Educational Policy (IEP) is the national body that develops ESD tools and materials. The IEP also evaluates the quality of any teaching tools and materials and approves their implementation in formal education and encourages the development and production of ESD tools and materials. For all three countries, public money is invested in this activity.

3.5.2 Indicator 4.2

Sub-indicator 4.2.1 assesses whether countries have developed quality criteria and/or quality guidelines for ESD-related teaching tools and materials that are: (a) supported by public authorities?; (b) approved by public authorities?; and (c) tested and recommended for selection by educational institutions? No data was available for Turkey for this sub-indicator.

Cyprus is the only country of four in the region to have reported full implementation of five of the five sub-indicators under indicator 4.2 With regards to sub-indicator 4.2.1 (a) (Figure 21). However, both Cyprus and Greece, and their respective Institute for Educational Policy (IEP, in Greece) and the Unit of Education of Environment and Sustainable Development (EESD) of the Ministry of Education, Culture, Sports and Youth (in Cyprus), have developed quality control guidelines for ESD teaching tools and materials, based on a range of criteria. In Malta such mechanisms or guidelines have yet not been produced. Public authorities have approved such mechanisms or guidelines in Cyprus, but not yet in Greece or Malta (sub-indicator 4.2.1 (b), Figure 21).

Sub-indicator 4.2.1(c) assesses whether educational institutions have tested and recommended ESD-related teaching tools and materials (Figure 21). Cyprus and Malta have reported that such quality control mechanisms and guidelines exist for such institutions while Greece has reported that this has not yet occurred.

Cyprus, Greece and Malta have also reported that ESD teaching tools and materials are available in their respective national languages (sub-indicator 4.2.2(a)). For these three countries, such tools are available in their national languages across early childhood, primary and secondary education (sub-indicator 4.2.2(b), Appdx. 35). Greece is the only country in which ESD related materials at ISCED 4 (including vocational) has been reported as available in the national language. Regionally, Malta is the only country with materials and tools available at lower secondary vocational level. Greece and Cyprus are the only countries to have reported that such tools are available at Bachelor's, Master's and doctorate level.

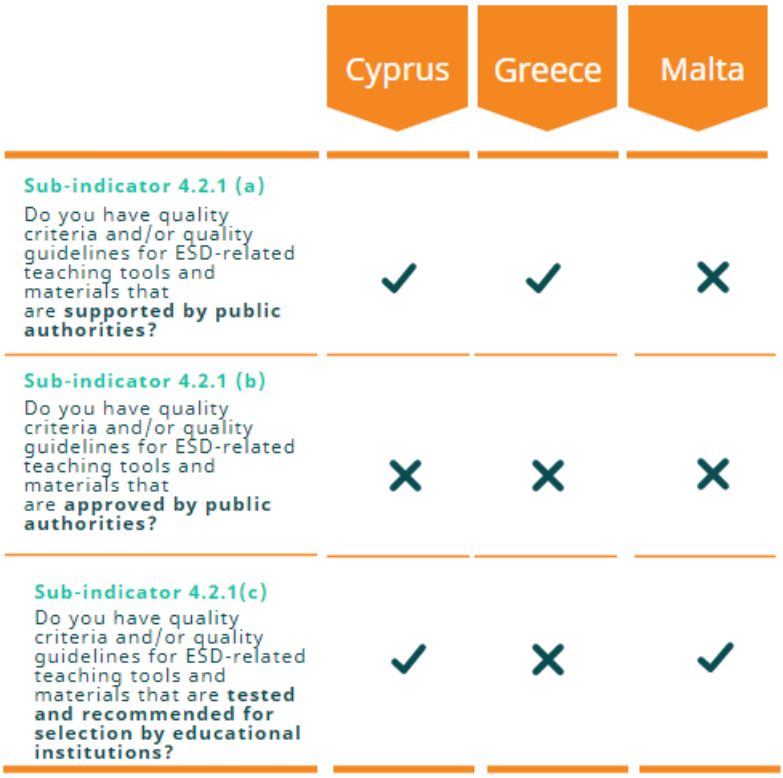


Figure 21. Country responses to ESD Indicator 4.2 – *Quality control mechanisms for teaching tools and materials for ESD exist.* Data were extracted from 2018 National Implementation Reports for Cyprus, Greece and Malta.

3.5.3 Indicator 4.3

A national strategy or mechanism designed to disseminate ESD can promote and facilitate the use of tools and materials (Sub-indicator 4.3.1, Appdx. 36). Such a strategy exists in Greece and Cyprus, but not yet in Malta. No data was available for Turkey.

In Greece, the Ministry of Education promotes the national strategy of ESD in order to improve new models of management in educational policies and in accordance to European Policies and governance[39] in all structures of education, and particularly through environmental education centers. In Cyprus, the Ministry of Agriculture Natural Resources and Environment and the Ministry of Education and Culture both have strategies for the dissemination of ESD tools and materials. In both Cyprus and Greece, public authority money is invested in this activity (Sub-indicator 4.3.2, Appdx. 36). In Greece, this primarily occurs through the funding of environmental educational centres where in Cyprus, such activities are included in the total budget for

[39] Law 4547/2018/ OJG 102 A/12-6-2018

promoting ESD in formal, non formal and informal education for Cyprus Ministry of Education and Culture. For all three countries, extensive and free materials on ESD are available online (Sub-indicator 4.3.3, Appdx. 36).

In Cyprus and Greece, a register or database of ESD teaching tools and materials in the national language is accessible through the Internet (Sub-indicator 4.3.4, Appdx. 36, Appdx. 37). This is not yet the case for Malta.

3.6 Issue–5 - Promote research on and development of ESD

Under Issue 5 as defined by the National Implementation Reports (NIRs), countries report on how they promote research on and the development of ESD. Issue 5 is composed of three indicators and eleven sub-indicators (Figure 22).

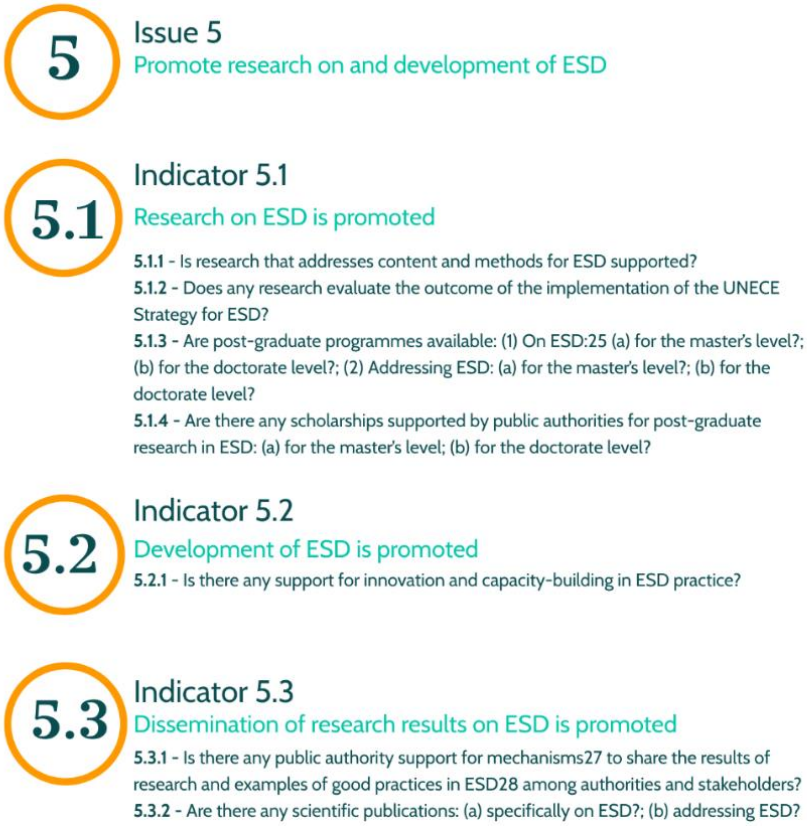


Figure 22. Graphical summary of the indicators and associated sub-indicators addressed under the ESD *Issue 5 – Promote research on and development of ESD,* as per the National Implementation Reports on ESD.

3.6.1 Indicator 5.1

Whether research from sources such as the State, local authorities, business and non-governmental organizations or institutions on ESD is promoted is assessed through indicator 5.1 and its eight sub-indicators.

Research that addresses content and methods for ESD includes related concepts, formation of attitudes and values, the development of competencies, teaching and learning and school development, the implementation of information communications technology and means of evaluation, and socioeconomic impacts. In Greece, Cyprus and Malta research that addresses such ESD related content and methods is supported (sub-indicator 5.1.1, Appdx. 38). No data was available for Turkey.

In Cyprus, the Foundation for the Management of European Lifelong Learning Programmes (FMELLP) is the national agency designated with managing the European Programme Erasmus+, and the European Programme for Education, Training, Youth and Sports since 2007. FMELLP manages the actions related to School and Higher Education, Vocational Education and Training and Adult Education and is currently directed by a Board of Directors with nine members, as appointed by the Council of Ministers. The main occupation of the FMELLP is the management of the funds that are granted in Cyprus from the European Commission for the attendance of the Cypriot Beneficiaries in European Education and Training Programmes as well as for the implementation of projects in all fields of Education (School Education, Higher Education, Vocational Education and Training, Adult Education) and the field of youth and sport.

Furthermore, during the 2018-2019 period, Cyprus has planned a large-scale, nation-wide research project to evaluate the impact of SEEP to students' and teachers' knowledge, awareness, attitudes, and participation in Sustainable Development issues. The research will assess the effectiveness of SEEPs to the implementation of whole school approaches. It will first be conducted in primary education, which was the first educational level in which the SEEPs were applied. Gradually, the research will be applied to pre-primary education. No additional plans for evaluation beyond compulsory education were stated.

No country of four has reported that research evaluates the outcome of the implementation of the UNECE Strategy for ESD (sub-indicator 5.1.2, Figure 23).

Sub-indicator 5.1.3

Sub-indicator 5.1.3 assesses whether post-graduate programmes are available: (1) On ESD for the Master's level (a) and for the doctorate level (b), where programmes "On ESD" means that ESD is specifically addressed by substance and/or by approach. and where "research on ESD includes both the theoretical and operational aspects of ESD, e.g. educational concepts, methodology, philosophical principles applied in ESD, methods and tools for implementation, indicators of success, efficiency/effectiveness of programmes, appropriateness of institutional settings and tools and materials" (UNECE, 2009). Part 2[40] of the sub-indicator assesses whether post-graduate programmes available addressing ESD at (c) Master's level and (d) at the doctorate level. In contrast, "research addressing ESD refers to SD-related studies (e.g. clean production,

[40] Henceforth, defined as 5.1.3 (c) and (d).

sustainable consumption and production, water management, sustainable energy) that include ESD components" (UNECE, 2009). This sub-indicator specifically seeks information regarding available programmes at Master's and doctorate levels.

Cyprus, Greece and Malta have all reported that extensive master's programmes *on ESD* exist (Appdx. 38). Over 15 programs were cited across the three countries. Examples include the Interdisciplinary 2-year Postgraduate Program entitled "*Education for Sustainability - Education Sciences*" at Aristotle University of Thessaloniki, the MSc in *Education for Sustainable Development*, and *ICT for ESD*, at Frederick University of Cyprus. In Malta, the Centre for Environmental Education and Research (CEER) offers both Master's in Education for Sustainable Development and Doctorate programmes on ESD. Both Cyprus and Greece have reported that ESD is examined at the PhD level.

All three countries have reported that programmes addressing ESD exist at both mater's and doctorate level (Appdx. 38). In Greece and Malta, those programmes *addressing ESD* are more numerous that those that are specifically *on ESD*, with 15 programmes available at the Master's level between the two countries.

Sub-indicator 5.1.4

Sub-indicator 5.1.4 assesses whether there are scholarships *supported by public authorities* for post-graduate research in ESD are available for the Master's level. In Greece, scholarships are provided through the National Scholarship Foundation and General Secretariat of Research, and in Malta through the Ministry of Education and Employment. As of 2015, in Cyprus, private Frederick University is the only institution to offer scholarships specifically provided for post-graduate research in ESD at the Master's level. Only Malta has reported that scholarships at the doctorate level are available (sub-indicator 5.1.4 (b), Figure 23). No data was available for Turkey.

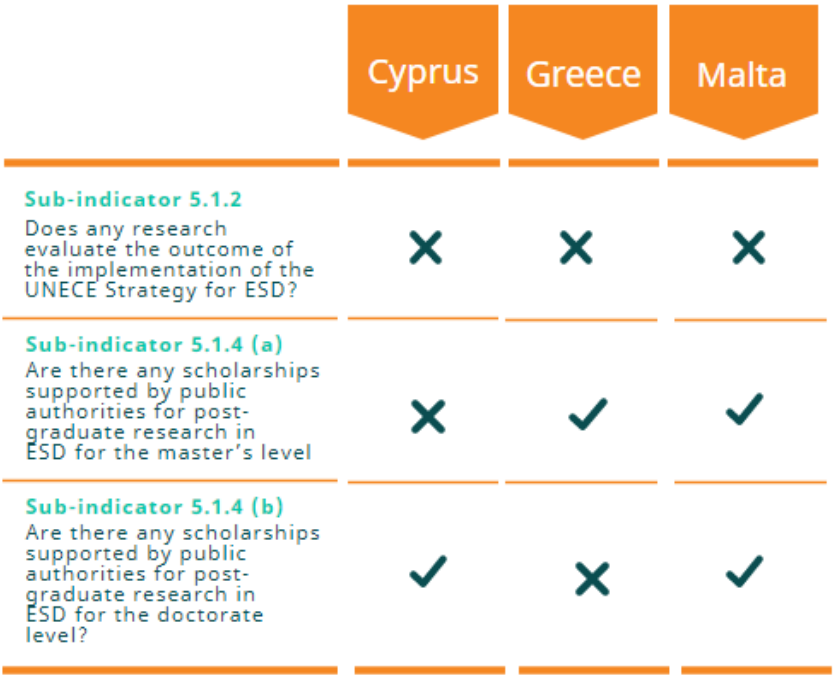


Figure 23. Responses to ESD indicator 4.1 Cyprus, Greece and Malta. Data were extracted from 2018 National Implementation Reports on ESD.

3.6.2 Indicator 5.2

Indicator 5.2.1 assesses whether there is support for innovation and capacity-building in ESD practice, which may include activities such as projects, action research, social learning and multi-stakeholder teams. Cyprus, Greece and Malta have reported that such support exists (Appdx. 39). No data was available for Turkey.

In Cyprus, the Network of Environmental Education Centres (EECs) is a governmental network created by the Cyprus Ministry of Education, Culture, Sports and Youth (MoECSY) and is under the auspices of the Unit of EESD. Its aim is to promote environmental education and sustainable development issues, placing particular emphasis on non-formal education (The Network of Environmental Education Centers, No Date). The governmental network of EECs includes 7 EECs. As a result of its programs and activities, more than 700 000, 6 000 teachers, 4 000 professionals have participated since 2012. An innovative aspect of this initiative is that various partners from governmental and the private sector, NGO's, local authorities and the local population have come together, and in cooperation with the Unit of EESD, organise and provide specific environmental and Sustainable education programmes (informal and non-formal), taking in consideration the particularities of the local communities and the environmental fields in the surrounding areas of each centre. (Republic of Cyprus, 2015, 2018a). The Network of Environmental Education Centres offer outdoor learning activities, field studies, discussions and experiential learning as some of the methods and approaches that are used (Republic of Cyprus, 2018a).

In Malta, the Global Education Network Europe (GENE) programme was recently introduced. GENE is a network of European Ministries, Agencies and other national bodies in the field of development education and global education. GENE was founded in 2001 and today includes membership from over 25 countries. The Ministry of Education, Culture, Sport and Youth in Cyprus and the Ministry of National Education, Research and Religion in Greece are participant ministries. Turkey does not have a participant ministry or agency in GENE.

3.6.3 Indicator 5.3

Indicator 5.3 assesses whether the dissemination of research results on ESD is promoted and is composed of three sub-indicators.

Sub-indicator 5.3.1 assess whether there is any public authority support for mechanisms – such as conferences, summer schools, journals, periodicals, networks – to share the results of research and examples of good practices in ESD among authorities and stakeholders. Cyprus and Malta have reported that such mechanisms exist (Appdx. 40). Data was not available for either Greece or Turkey.

Malta has reported that in addition to dissemination of ESD research in Malta through national and international peer-reviewed journals, the Centre for Environmental Education and Research has scheduled four national and international conferences in Malta that provide opportunities for the dissemination on ESD Research. In Malta, best practice examples of ESD are also disseminated through the Eco-Schools Network Newsletter and Dinja Wahda newsletter.

Sub-indicator 5.3.2

Sub-indicator 5.3.2 assesses whether there any scientific publications specifically on ESD (a) and addressing ESD (b). Cyprus, Greece and Malta have reported that scientific publication *on ESD* exist however only Cyprus and Greece have reported that publications *addressing ESD* exist (Appdx. 40).

In Greece, between 2011-2018, 43 papers have been published *on* or *addressing ESD* according to a Google Scholar database of accredited international journals. Cyprus has reported a list of examples including textbooks, book chapters and articles. Malta has reported two textbooks/handbooks specifically *on ESD* have been published but no scientific publications *addressing ESD* yet.

3.7 Issue 6 – Strengthen cooperation on ESD at all levels within the European Region

Under Issue 6 of the National Implementation Reports (NIRs), countries report on countries strengthen cooperation on ESD at all levels within the European Region. Issue 6 is composed of one indicator and four sub-indicators (Figure 24).

Figure 24. Graphical summary of the indicators and associated sub-indicators addressed under the ESD *Issue 6 – Strengthen cooperation on ESD at all levels within the European Region* as per the National Implementation Reports on ESD.

3.7.1 Indicator 6.1

Sub-indicator 6.1.1

Sub-indicator 6.1.1 assesses whether public authorities cooperate in or support international networks – international associations, working groups, programmes, partnerships, etc. – on ESD at the global and regional levels. All four countries have reported that such networks are supported by public authorities (Appdx. 41). It has been reported that all of the four three countries have institutions within the UNESCO's Associated Schools Network (ASPnet). The ASPnet Strategy for 2014-2021, "Global Network of Schools addressing Global Challenges", identifies Education for Sustainable Development as one of its two priorities. Further, all four countries are also active through the MEdIES online network, and through respective Eco-Schools networks. Moreover, international cooperation with regards to education, training and public awareness in Cyprus, Greece and Malta is reinforced though each country's commitment to the Paris Agreement (UNFCCC, 2015). Turkey is not party to the Paris Agreement.

Sub-indicator 6.1.2

Sub-indicator 6.1.2 assesses whether national educational institutions or organizations (formal and non-formal) participate in international networks related to ESD. All four countries have reported that their national institutions or organizations participate (Appdx. 41). Cyprus, Greece and Malta are member of the Global Education Network Europe (GENE) programme, which is a network of European Ministries, Agencies and other national bodies in the field of development education and global education. GENE was founded in 2001 and today includes membership from over 25 countries. Specifically, the Ministry of Education, Culture, Sport and Youth in Cyprus and the Ministry of National Education, Research and Religion in Greece are participant ministries. Turkey does not have a participant ministry or agency in GENE.

Sub-indicator 6.1.3

Sub-indicator 6.1.3 assesses whether there any state, bilateral and/or multilateral cooperation mechanisms or agreements that include an explicit ESD component. As per the National Implementation Reports, Cyprus, Greece and Malta have all reported that such mechanisms or agreements exist (Appdx. 41). Regionally, the Mediterranean Strategy on ESD (MSESD), adopted in Athens in 2014, by the Ministers of Environment of the Union for the Mediterranean (UfM) and the long-standing MEdIES (Mediterranean Education Initiative on Environment and Sustainability) initiative of MIO-ECSDE serve as strong examples of multilateral cooperation in the Mediterranean.

Furthermore, as stated in sections 1.1 and 3.2.1, Cyprus, Greece and Malta are member states of the European Union, and thus, these countries have solidified their commitment to the role of ESD as a critical driver of the SDGs through the European Green Deal (European Commission, 2019).

ESD is also included in the three Rio Conventions, signed in 1992, on climate change,[41] biodiversity[42] and desertification[43]. ESD is also recognized in Sendai Framework for Disaster Risk Reduction, and the 10-Year Framework of Programmes on Sustainable Consumption and Production (2012-2021).

No data was available for Turkey for this section.

[41] The United Nations Framework Convention on Climate Change (UNFCCC). Cyprus, Greece and Malta have ratified the convention but Turkey has not.
[42] The United Nations Convention on Biological Diversity (CBD); all four countries assessed in this report have ratified the treaty.
[43] The United Nations Convention to Combat Desertification (UNCCD) was adopted in Paris, France on 17 June 1994 and entered into force in December 1996. All four countries assessed in this report are signatories to the convention.

Sub-indicator 6.1.4

Sub-indicator 6.1.4 assesses whether governments take any steps to promote ESD in international forums outside the European region. Cyprus, Greece and Malta have reported progress outside of the European region (Appdx. 41). No data was available for Turkey. To reiterate, regional forums and agreements on behalf of the ministers of environment of the Union for the Mediterranean (UfM) have provided an important endorsement of the Mediterranean Strategy on ESD (MSESD).

4.0 CONCLUSIONS

The objective of the present study was to summarize the state of ESD implementation in Cyprus, Greece, Malta and Turkey. It did so by quantifying country's responses to the six key issues as per the National Implementation Reports on ESD. The finding of this preliminary study provided insight on the successes, challenges and data availability at national level.

The key findings of the report according to each of the six issues are as follows[44]:

Issue 1. *Ensure that policy, regulatory and operational frameworks support the promotion of ESD*

- All countries assessed have appointed national focal points and have coordinating bodies for ESD in place.
- Three quarters of countries assessed have sought synergies at the national level between policy processes related to ESD.
- Half of the countries assessed have reported national implementation plans.
- All countries assessed have also reported that ESD is included across the relevant national legislation and national curricula across primary and secondary education, but more information is required for higher institutions.
- Three quarters of countries have reported that they have taken steps to include ESD into their national Sustainable Development policy.

Issue 2. *Promote SD through formal, non-formal and informal learning*

- Key themes addressed refer either equally or nearly equally (between 5-10% less) to teaching and learning methods in ESD than to SD and learning outcomes.
- Countries have reported that ESD implementation occurs more commonly through existing subject matter relative to the cross-curricular approach or as a stand-alone subject.

[44] To compare the results of this study on selected countries in the Mediterranean to entire European region, please see: UNECE. 2019. *Preliminary results on progress achieved and challenges encountered in the fourth phase of implementation of the UNECE ESD strategy.* Prepared by Dr. Stella Hadjiachilleos. Available online: https://www.unece.org/fileadmin/DAM/env/esd/14thMeet_SC/Doc/Presentations/revised_Inf_paper_1_-_Prelminary_findings.pdf. [Accessed 10 May 2020].

- The whole-institution approach has been implemented in all four countries in early childhood, primary and secondary education. Half of the countries assessed have further implemented the whole-institution approach across tertiary levels of education. More could be done with regards to incentives that support the whole-institution approach, including the implementation of ESD in school plans.
- A lot of work needs to be done with regards to the development of SD/ESD indicators for both formal and nonformal institutions beyond early childhood, primary and secondary education.
- While education quality assessment/enhancement systems are present across all four countries, such systems that explicitly address ESD are fewer, and those that address ESD at the national level even fewer.
- Countries have reported that they plan to focus more on the knowledge, skills and competences, values and attitudes, as learning dimensions behind ESD, and less on the behavioral dimension of learning.
- Countries have reported strong multi-stakeholder cooperation with regards to ESD.

Issue 3. *Equip educators with the competence to include SD in their teaching*

- Initial training is mandatory in 3/3 of the countries assessed. Initial training is most commonly offered by tertiary institutions.
- In-service training on ESD is most commonly available on a voluntary basis (2/3) and offered by government institutions, tertiary institutions and NGOs. The objective of in-service training is geared towards the acquisition of skills and competences, the whole-institution approach, environmental and outdoor education training, the practical application of ESD and the development of soft skills.
- Some countries have reported that the systematic and regular organization of in-service training has proven beneficial for the generation of ideas and practical solutions on how to effectively integrate ESD into school. The limited time availability of teachers due to the overcrowded curricula, directorate resistance to apply ESD, and funding issues have been highlighted as challenges in this area.
- Within the three countries for which data was available, multiple networks and platforms of educators who are involved in ESD have been reported at national, regional and international levels.

Issue 4. *Ensure that adequate tools and materials for ESD are accessible*

- Significant challenges exist with regards to the development and implementation of quality criteria and/or quality guidelines for ESD-related teaching tools and materials. Specifically, challenges exist in generating support and approval from public authorities, and in testing the tools for selection.

- Teaching tools and materials are widely available in three countries, across many levels of education. Two-thirds of countries have a national strategy for the dissemination of such tools and materials and 2/3 have a national database to further increase accessibility.

Issue 5. *Promote research on and development of ESD*

- All countries with available data have reported that research on the content and methods of ESD is given high priority. Extensive Master's and doctorate programs on and addressing ESD have been reported, as have many scientific publications addressing and on ESD. While generating research and knowledge on ESD has been reported as successful, challenges remain in translating research into policy.
- Challenges have also been reported across countries in providing scholarships at the Master's or doctorate level for ESD-related research.
- Support for capacity building and innovation is often publicly funded and receives widespread multi-stakeholder participation and cooperation.
- No country assessed has reported research that evaluates the outcome of the implementation of the Strategy for ESD.
- Only one third of countries have reported that there is public authority support for mechanisms which support the sharing of results, research and examples of good practices in ESD among authorities and stakeholders.

Issue 6. *Strengthen cooperation on ESD at all levels within the European region*

- Significant success has been reported across all four countries with regards to the participation of national authorities, formal and non-formal educational institutions in international networks on ESD. Regional and international networks have been reported as extensive and all countries have reported that participation is of high priority. Examples include the ESD Steering Committee, the Mediterranean Education Initiative on Environment and Sustainability (MedIES), the Global Education Network for Europe (GENE), Union for the Mediterranean (UfM), and UNESCO Associated Schools Project Network (ASPNet), among others.

When data was disaggregated according to ISCED levels, nuances in implementation were highlighted. For example, ESD implementation across post-secondary non-tertiary (ISCED 4), post secondary non-tertiary vocational (ISCED 4.5), short-cycle tertiary (ISCED 5), short-cycle tertiary vocational (ISCED 5.5) Bachelor's, Master's and doctorate (ISCED 6-8) levels of education were reported as lower than early childhood, primary and secondary levels of education.

At post-secondary levels, only 50% of countries assessed have national legislation which addresses ESD. None of the four countries have national legislation which addresses ESD for

short-cycle education. Only one country of four has reported that national education legislation addressing ESD exists at the Bachelor's level exists. No country assessed has reported national educational policies that address ESD at the doctorate level (Appdx. 5) however, several PhDs have been published at the University of Athens on ESD.

No country has reported that ESD is addressed through existing subjects, a cross-curriculum approach, the provision of specific subject programmes and courses or a stand-alone project in across ISCED levels 4-5. While the integration of ESD through existing subjects and through stand-alone projects is reported at tertiary levels, only one country of four has reported that ESD is addressed through a cross-curriculum approach at Bachelor's, Master's or doctorate level.

There has been considerable success in the region in implementing the whole-institution approach across early childhood, primary and secondary education. Half of the countries assessed have implemented the whole-institution approach at tertiary level. Only one country of four has reported that incentives (guidelines, award scheme, funding, technical support) that support a whole-institution approach to ESD are available across post-secondary non-tertiary education, Bachelor's, Master's and doctorate level. Of the four, no country has reported that such incentives exist across short-cycle tertiary or short-cycle tertiary vocational education. Incentives at the tertiary level of education are fewer than at primary and secondary education.

Regionally, only one country of four has reported that formal institutions develop their own SD/ESD indicators for post secondary non-tertiary, Bachelor's Master's and doctorate levels of education. No country assessed in the study has reported that formal institutions have developed indicators for ISCED level 4-8. Furthermore, only one country has reported that nonformal institutions develop their own SD/ESD indicators, however, this has only been reported across primary, lower secondary, lower secondary vocational and upper secondary education. No country assessed has reported that nonformal institutions have developed their own SD/ESD indicators beyond secondary education but this indicator remains difficult to assess.

No country has reported that education quality assessment/enhancement systems exist across short-cycle tertiary or short-cycle tertiary vocational education. Half of the countries assessed have reported that such assessment systems exist across Bachelor's, Master's and doctorate level. Moreover, only one country of four has reported that, within the next five year, their education system is planning to reinforce the learning dimensions of *knowledge, skills and competencies, values and attitudes or behaviours* in student assessment, in relation to ESD, across ISCED 4-8 and associated sub-categories. Moreover, there is only one country to have reported plans to reinforce *behaviors* as a learning dimension in student assessments/examinations in the next five years, but only across early childhood, primary and secondary. Lastly, no country has reported that teaching materials on ESD are readily available online, in national languages for post-secondary and short-cycle tertiary education. Half of the countries assessed have reported that such materials are available at Bachelor's, Master's and doctorate level.

Cyprus, Greece, Malta and Turkey have reported significant results with regards to the implementation of ESD across primary and secondary education. Further implementation of ESD into post-secondary and tertiary levels of education could help to realize socio-economic mobility, support life-long learning and increase the employability of graduates, providing them with the competences to address the rapidly-evolving challenges of the 21st century.

5.0 RECOMMENDATIONS

While disaggregating ESD implementation highlighted the challenges across post-secondary, short-cycle tertiary, Bachelor's, Master's and doctorate levels of education, it should be recognized that it may not be easy to obtain comprehensive and comparable data due to the nature and independence of higher education institutions. Nonetheless, these paucities present opportunities for countries to implement ESD-related policies and practices and to further enable the education system to play a key role in enabling sustainable development.

- Countries may wish to consider taking legislative decisions at the system level in order to integrate ESD into relevant national education legislation across post-secondary, short-cycle tertiary (including vocational), Bachelor's, Master's and doctorate levels of education. Alternatively, institutions themselves may consider adopting a national charter of universities. These suggestions could serve to promote the adaptive and dynamic professionalization of learners, enabling their smooth integration into the job market, or leading to their attainment of additional qualifications.
- Countries may wish to focus on implementing a cross-curriculum approach as it is often preferred to others such as an existing subject, and as data exhibited the greatest paucities regarding this method across post-secondary, short-cycle tertiary and tertiary levels of education. Such a shift in implementation could help ESD to outgrow its topical understanding and to work more proactively at the systemic level. Education systems could also consider addressing ESD through the provision of specific subject programmes and courses or a stand-alone project.
- Education systems may wish to consider adopting the whole-institution approach across post-secondary, short-cycle tertiary and tertiary levels of education as they can serve to foster habits of lifelong learning, promote sustainable behaviors within society and optimize their unique, local situation. Teachers of the countries assessed may benefit from initial or in-service *partnership management training* which could provide educators with the capacity to confidently strengthen school-community collaboration.
- Governments may wish to create incentives – guidelines, award schemes, funding, technical support – for short-cycle tertiary (ISCED 5) and tertiary (ISCED 6-8) education. This could support innovative, localized methods which could increase the match between skills gained through education and those demanded by industry.

- Countries may wish to develop education quality assessment/enhancement systems across post-secondary, short-cycle tertiary and tertiary levels of education, if they have not yet done so. This could help to ensure that learning is high-quality, meaningful and fully aligned with the needs of industry.
- As work-based learning is seen as most effective when paired with prior exposure to education for sustainable development, countries may wish to further collaborate and cooperate with the non-formal education sector, civil society organizations, other sectors and industry. This could help to ensure that opportunities for work-place learning such as internships, apprenticeships, work-placements and in-service sectoral training are re-oriented towards sustainability, and that the workforce will receiving meaningful training in how to best apply their knowledge and use technology with regards to sustainable development.
- Countries may benefit from ensuring that educators outside of early childhood, primary and secondary education receive high-quality training on how to integrate ESD into their practice. This may promote an increased confidence or competency regarding SD, increased clarity and understanding surrounding SD concepts, and an increased pedagogical knowledge in ESD. In-service training on ESD could play a key role in reducing the perceived barriers to implementing ESD in the classroom, thus ensuring that all learners receive a sustainable education. Countries may further benefit from ensuring that leaders and administrators also receive ESD training outside of compulsory education. School principals and administrators play a critical role in the successful implementation of ESD as they can encourage the inclusion of ESD across curricula and activities, support the transition towards a holistic, whole-school approach to ESD, and facilitate the re-focusing of educational aims.
- Countries may benefit by ensuring that high-quality materials on ESD for ISCED levels outside of primary and secondary education are available online and in national languages. The promotion of ESD through high-quality materials is critical as it provides suggestions towards the practical and feasible implementation.
- Regional cooperation amongst countries and bilateral partnerships must be enhanced and strengthened. This report highlighted that countries are cooperating through various regional process, however, empowering and strengthening these partnerships would be beneficial to the future of ESD and society. Using regional mechanisms such as the Mediterranean ESD Action Plan as a platform of communication and synergy could create a bridge for the exchange of information, ideas, good practice on ESD but mainly as a means for jointly confronting the common challenges in the Mediterranean Region.

6.0 BIBLIOGRAPHY

Action Aid. 2018. 2018 Annual Report. Available online: http://www.actionaid.gr/media/2018464/annual-report2018_ENG.pdf [Accessed 19 March 2020].

Adams, M. 2006. *The future of sustainability: Re-thinking environment and development in the 21st Century*. Report of the IUCN thinkers meeting. Available online: https://portals.iucn.org/library/node/12635

Affolter, C., Varga, A. 2018. Environment and School Initiatives: Lessons from the ENSI Network – Past, Present and Future. Publisher: Environment and School Initiatives, Vienna and Eszterhazy Karoly University, Budapest. ISBN: 978-3-200-05834-7.

Breiting, S. and Mayer S. 2015. Quality Criteria for ESD Schools: Engaging Whole Schools in Education for Sustainable Development. Chapter in Schooling for Sustainable Development in Europe: Concepts, Policies and Educational Experiences at the End of the UN Decade of Education for Sustainable Development. Eds. John Chi-Kin Lee, J., Williams, M., Stimpson P. Vol. 6. pp394. (Quote retrieved from pp. 34)

Burgess, S. and Sievertsen, S. S. 2020. Schools, skills, and learning: The impact of COVID-19 on education. Published: 01 April 2020. Available online: https://voxeu.org/article/impact-covid-19-education. [Accessed 2 July 2020].

Friedman, T. 2020. Our New Historical Divide: B.C. and A.C. — the World Before Corona and the World After. Available online: https://www.nytimes.com/2020/03/17/opinion/coronavirus-trends.html [Accessed 2 July 2020].

City of Athens. 2018. Open Schools. Available online: https://www.athensopenschools.gr/en [Accessed 15 March 2020].

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS The European Green Deal. COM/2019/640 final. Document Code: 52019DC0640. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640 [Accessed 2 May 2020]

Council of the European Union. 2019. Towards an ever more sustainable Union by 2030. Council conclusions. Luxembourg, 9 April 2019. Available online: https://www.consilium.europa.eu/media/39019/st08286-en19.pdf [Accessed 2 May 2020].

Courtenay-Hall, P. & Rogers, L. 2002. Gaps in Mind: Problems in environmental knowledge-behaviour modelling research, Environmental Education Research, 8:3, 283-297

Republic of Cyprus. 2015. Second Cycle reporting on implementation of the UNECE Strategy for Education for Sustainable Development. 2015. Available online: https://www.unece.org/fileadmin/DAM/env/esd/10thMeetSC/Documents/Cyprus.pdf. [Accessed 1 March 2020].

Republic of Cyprus. 2018a. Third Cycle reporting on implementation of the UNECE Strategy for Education for Sustainable Development. Available online: https://bit.ly/2ydxh5Z [Accessed 30 April 2020]. Pg. 4.

Republic of Cyprus, 2018b. Cyprus Informal Report on ESD. Available online: https://www.unece.org/fileadmin/DAM/env/esd/13thMeetSC/Documents/Country_Reports/CYPRUS_Informal_reporting_2018.pdf. [Accessed 1 March 2020].

European Commission/EACEA/Eurydice, 2018. The European Higher Education Area in 2018: Bologna Process Implementation Report. Luxembourg: Publications Office of the European Union.

De Châtel, F., Holst-Warhaft, G. and Steenhuis, T., 2014. Water Scarcity, Security and Democracy: a Mediterranean Mosaic. Global Water Partnership Mediterranean, Cornell University and the Atkinson Center for a Sustainable Future.

Dassiou, Xeni 2015. Greece in Economic Crisis: The Case of Health and Education, Vierteljahrshefte zur Wirtschaftsforschung, ISSN 1861-1559, Duncker & Humblot, Berlin, Vol. 84, Iss. 3, pp. 145-164, http://dx.doi.org/10.3790/vjh.84.3.145. Available online: https://www.econstor.eu/bitstream/10419/150064/1/vjh.84.3.145.pdf [Accessed 4 July 2020].

European Centre for the Development of Vocational Training [CEDEFOP). 2017. *Vocational education and training in Malta.* Luxembourg: Publications Office of the European Union. Available online: https://www.cedefop.europa.eu/files/4151_en.pdf. [Accessed 20 March 2020].

European Commission. 2019. Education and Training Monitor 2019 Malta. Available online: https://ec.europa.eu/education/sites/education/files/document-library-docs/et-monitor-report-2019-malta_en.pdf [Accessed 4 July 2020].

EURASHE. 2011. *Short Cycle Higher Education in Europe: Level 5: the Missing Link*. Available online:https://www.eurashe.eu/library/modernising-phe/L5_report_SCHE_in_Europe_full_report_Jan2011.pdf [Accessed March 9 2020].

Fadeeva, Z. and Galkute, L. 2012. Looking for Synergies: Education for Sustainable Development and the Bologna Process. Journal of Education for Sustainable Development 6(91). Available online: http://jsd.sagepub.com/content/6/1/91 [Accessed 13 March 2020].

Gkini, I., Gavrilakis, C. and Flogaiti, E. (2016). Perceptions and Attitudes of Primary School Teachers regarding School and Community Collaboration for Sustainable Development. In: E.I. Manolas & G.E. Tsantopoulos (eds.), Themes of Forestry and Management of the Environment and Natural Resources – Volume 8: Environmental Education and Communication, Orestiada:

Department of Forestry and Management of the Environment and Natural Resources, Democritus University of Thrace, pp. 31–51

Hasanefendic, S., et al. 2015. Training students for new jobs: The role of technical and vocational higher education and implications for science policy in Portugal. Technol. Forecast. Soc. Change http://dx.doi.org/10.1016/j.techfore.2015.12.005

Haktanır, G., Güler, T., and Kahriman, D. 2016. Education for Sustainable Development in Turkey. Chapter in *International Research on Education for Sustainable Development in Early Childhood*, Siraj-Blatchford, J., Mogharreban, C. and Park, E. (Eds.). (pp. 222). DOI: 10.1007/978-3-319-42208-4_10

Hellenic Republic. 2018. National Implementation Report on ESD. Available online: https://www.unece.org/env/esd/implementation.html [Accessed 1 March 2020].

International Monetary Fund. July 2019. World Economic Outlook, 2019. Available online: https://www.imf.org/en/Publications/WEO/Issues/2019/07/18/WEOupdateJuly2019 [Accessed 1 May 2020].

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services [IPBES]. 2019. Summary for Policy Makers.

Intergovernmental Panel on Climate Change [IPCC]. 2019. Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Summary for Policy Makers available online: https://www.ipcc.ch/sr15

Kadji-Beltran, C., Zachariou, A., & Stevenson, R. B. (2013). Leading sustainable schools: exploring the role of primary school principals. Environmental Education Research, 19(3), 303–323. doi:10.1080/13504622.2012.692770

Klöckner, C. A. 2013. A comprehensive model of the psychology of environmental behaviour—a meta-analysis. Global Environ. Change-Human Policy Dimensions 23, 1028–1038. doi: 10.1016/j.gloenvcha.2013.05.014.

Krause, Kerri-Lee. 2012. Addressing the wicked problem of quality in higher education: theoretical approaches and implications, Higher Education Research & Development, 31:3, 285-297, DOI: 10.1080/07294360.2011.634381 [Accessed 19 March 2020].

MEDIES, 2014. The Mediterranean Strategy on Education for Sustainable Development. Available online: https://medies.net/mediterranean-strategy-on-esd-2014/

MEDIES, 2016. https://medies.net/action-plan-of-the-mediterranean-strategy-on-esd/

MIO-ECSDE, 1996. Re-orienting Environmental Education for Sustainable Development – Summary Report of the Inter-regional Workshop, Athens, June 26-30, 1995. UNESCO-UNEP, MIO-ECSDE.

MIO-ECSDE. 2018a. *Education for Sustainable Development in the Mediterranean: Regional Perspectives and Monitoring Challenges.* In Sustainable Mediterranean Special Issue No 74, First year's progress of the MSESD Action Plan Proceedings of the 1st Meeting of the Mediterranean ESD Committee.

MIO-ECSDE. 2018b. *Sustainable Mediterranean: First Year's Progress of the MSESD Action Plan.* Available online: http://mio-ecsde.org/wp-content/uploads/2018/10/Final_74_soma_lowres.pdf [accessed March 9 2020].

National Sustainable Development Strategies (NSDS). No Date. Available online: https://sustainabledevelopment.un.org/topics/nationalsustainabledevelopmentstrategies [Accessed 9 March 2020].

The Network of Environmental Education Centers. Ministry of Education and Culture to promote the issues of Environmental Education in Cyprus. No Date. http://www.moec.gov.cy/dkpe/ [Accessed 30 March 2020].

OCED. 2016. Public Spending on Education. Available online : https://data.oecd.org/eduresource/public-spending-on-education.html [Accessed 4 July 2020].

OECD. 2017. Education Policy in Greece: A Preliminary Assessment. Available online: http://www.oecd.org/education/Education-Policy-in-Greece-Preliminary-Assessment-2017.pdf [Accessed 4 July 2020].

Papanikos, G. 2017. The Great Recession and its Effect on Greek Education Spending. Conference Paper. Athens. Available online : https://www.researchgate.net/publication/321747742_The_Great_Recession_and_its_Effect_on_Greek_Education_Spending [Accessed 4 July 2020].

Richard, Taylor and Nathan, 2003. Using Work-Based Learning to Develop Education for Sustainability. Journal of vocational education and training. 55(2). Available online: https://www.tandfonline.com/doi/pdf/10.1080/13636820300200224

Sağlamer, G. 2013. *The Mediterranean Sea: Cradle of Civilization.* Available online: https://unchronicle.un.org/article/mediterranean-sea-cradle-civilization [Accessed 13 March 2020].

Scoullos M. 1998. Environment and Society: Education and Public Awareness for Sustainability. Proceedings of the Thessaloniki International Conference organised by UNESCO and the Government of Greece (8-12 December, Athens), 862 pp.

Sustainable Development Goal 4. No Date. Available online: https://sdg4education2030.org/the-goal [Accessed 13 March 2020].

Tonkinwise, C. 2015. *Design for Transitions - from and to what?*. Academia.edu.

Turkish Ministry of National Education [MONE]. 2018. Outlook of technical and vocational education in Turkey. Available online : https://unevoc.unesco.org/network/up/TURKEY_MoNE-_Outlook_of_Vocational_and_Technical_Education_in_Turkey-_Series_of_Education_Analysis_and_Assessment_Reports_No_1_November_2018.pdf [Accessed 20 March 2020]

Republic of Turkey. 2018. Third Cycle reporting on implementation of the UNECE Strategy for Education for Sustainable Development. Available online: [https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Turkey_NIR_2018.pdf [Accessed 1 March 2020].

Union for the Mediterranean [UfM]. No Date. *What we do.* Available online: https://ufmsecretariat.org/what-we-do/ [Accessed 9 March 2020].

The United Nations Conference on Environment and Development [UNCED]. 1992. The Earth Summit. London: Graham & Trotman/Martinus Nijhoff.

UNECE. 2005. Strategy for Education for Sustainable Development. CEP/AC.13/2005/3/Rev.1, 23 March 2005.

UNECE. 2009. Learning from each other The UNECE Strategy for Education for Sustainable Development. Available online: https://www.unece.org/fileadmin/DAM/env/esd/01_Typo3site/LearningFromEachOther.pdf

UNECE. 2018. 2018 National Implementation Reporting. Available online: https://www.unece.org/environmental-policy/education-for-sustainable-development/about-the-strategy-for-esd/monitoring-implementation/2018-national-implementation-reporting.html. [Accessed 19 March 2020].

UNECE. 2019. Outcomes of the first meeting of the Ad hoc group on strategic planning: the draft concept note for the post-2019 implementation framework. Document code: ECE/CEP/AC.13/2019/4. Geneva.

UNECE. No Date. *Geographical Scope.* Available online: https://www.unece.org/oes/nutshell/region.html [Accessed 13 March 2020]

UNESCO. 1974. Finnish National Commission for UNESCO, Seminar on Environmental Education at Jammi, 1974.

UNESCO. 2010. Education for sustainable development lens: a policy and practice review tool. Document code:ED-2010/WS/33. ISBN:978-89-94307-41-1 (kor). Available online: https://unesdoc.unesco.org/ark:/48223/pf0000190898 [Accessed 1 May 2020].

UNESCO & MIO-ECSDE, 2013.

UNESCO. 2015. What is Education for Sustainable Development? Available online : https://en.unesco.org/themes/education-sustainable-development/what-is-esd [Accessed 1 March 2020].

UNESCO, World Education Forum, Ministry of Education, Republic of Korea. 2015. [UNESCO, WEF, 2015) Education 2030 Incheon Declaration and Framework for Action: Towards inclusive and equitable quality education and lifelong learning for all. Incheon: World Education Forum. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000245656

UNESCO. 2016. Education 2030: Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Document code:ED-2016/WS/28. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000245656 [Accessed 27 April 2020].

UNESCO. 2017a. UNESCO Bangkok, Asia and Pacific Regional Bureau for Education. Available online: https://bangkok.unesco.org/content/education-sustainable-development-and-global-citizenship-education-2030-sdg-4 [Accessed 1 May 2020].

UNESCO. 2017b. Implementing the Whole-School Approach under the Global Action Programme on Education for Sustainable Development. Available online: https://aspnet.unesco.org/en-us/Documents/EN_Background%20Note.pdf [Accessed 1 May 2020].

UNESCO. 2018a. The contribution of early childhood education to a sustainable society. Samuelsson, I. and Kaga, Y. (eds.). Available online: https://unesdoc.unesco.org/ark:/48223/pf0000159355. [Accessed 19 March 2020].

UNESCO. 2018b. A UNESCO position paper on the future of Education for Sustainable Development (ESD). Revised draft after Technical Consultation Meeting on the Future of ESD, 9-10 July 2018, Bangkok, Thailand. Available online: https://www.bne-portal.de/sites/default/files/unesco_position_paper_on_the_future_of_esd_280918.pdf [Accessed 3 July 2020].

UNESCO. 2019a. "*What is Education for Sustainable Development?"* Available online: https://en.unesco.org/themes/education-sustainable-development/what-is-esd. Accessed 8 Jan 2019.

UNESCO, 2019b. Educational content up close: Examining the learning dimensions of Education for Sustainable Development and Global Citizenship Education. Paris, France. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000372327

UNESCO. 2019c. Framework for the implementation of Education for Sustainable Development (ESD) Beyond 2019. Item 5.9 of the Provisional Agenda. UNESCO General Conference, 40th Session, Paris. Document Code: 40 C/23. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000370215 [Accessed 4 July 2020].

UNESCO. 2019d. *SDG 4 - Education 2030: Part II, Education for Sustainable Development beyond 2019.* Document code Document code 206 EX/6.II. (pp.12 of 15). Available online : https://unesdoc.unesco.org/ark:/48223/pf0000366797.locale=en [Accessed March 9 2020].

UNESCO. 2019e. Play & resilience: a toolkit for teachers, caregivers, and other stakeholders. Document code: IIC/2019/ED/1. Available online: https://unesdoc.unesco.org/ark:/48223/pf0000370734 [Accessed 1 May 2020]

UNESCO. 2020. COVID-19 education disruption and response. Available online: https://en.unesco.org/covid19/educationresponse [Accessed 3 July 2020].

UNESCO 2020b. *Tan Dun and Jean-Michel Jarre participate in World Environment Day 2020.* Available online: http://www.unesco.org/new/en/goodwill-ambassadors/news-single-view/news/tan_dun_and_jean_michel_jarre_participate_in_world_environme/ Published June 5, 2020. [Accessed 16 July 2020].

UNESCO. No Date. Unpacking Sustainable Development Goal 4 Education 2030. Guide. Available online: http://www.campaignforeducation.org/docs/post2015/SDG4.pdf

UNESCO Institute for Statistics [UIS]. 2011a. Glossary: Formal Education. Available online: http://uis.unesco.org/node/33463 [Accessed 1 May 2020].

UNESCO Institute for Statistics [UIS]. 2011b. Glossary: Non-Formal Education. Available online: http://uis.unesco.org/en/glossary-term/non-formal-education [Accessed 1 May 2020].

UNESCO Institute for Statistics [UIS]. 2019. Government Expenditure on Education as a Percentage of GDP. Available online: http://data.uis.unesco.org/. [Accessed 4 July 2020].

United Nations Framework Convention on Climate Change [UNFCCC]. 2015. Conference of the Parties: Adoption of the Paris Agreement. Document code: FCCC/CP/2015/L.9/Rev.1. Available online: https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf [Accessed 1 May 2020].

United Nations General Assembly, Transforming our world: the 2030 Agenda for Sustainable Development, 21 October 2015, A/RES/70/1. Paris, France. Available online: https://www.refworld.org/docid/57b6e3e44.html [accessed 21 February 2020]

University of Athens, 2012. http://unescochair.chem.uoa.gr/#CHARTER_of_Greek_Universities_for_Sustainable_Development

UN News. António Guterres: Parallel Threats of COVID-19, Climate Change, Require 'Brave, Visionary and Collaborative Leadership': UN Chief. Available online: https://news.un.org/en/story/2020/04/1062752 [accessed on 3 July 2020).

World Bank Group. 2019. Country Snap-shot: World Bank in Turkey. Available online: http://pubdocs.worldbank.org/en/288681571384697671/Turkey-Snapshot-Oct-2019.pdf [Accessed 9 March 2020].

York University. 2019. *History of ESD.* Available online : https://unescochair.info.yorku.ca/history-of-esd/ [Accessed 20 March 2020].

ANNEX A. METHODOLOGY

There are three types of questions prompted in the National Implementation Reports (NIR) on ESD. The first type of questions consists of a single dimension binary (yes/no) style question. Binary data were extracted from NIRs as follows: “Yes” was recorded as 1 and “No” as 0. Data from these questions were then analyzed according to regional presence (1) or absence (0) of implementation measures related to ESD. The assessment hierarchy described within the reporting format is as follows: Issue (6) indicators (18) and sub-indicators (66).

Data assessed at issue-level and indicator-level were standardized according to the number of sub-indicators per indicator. Data was never weighted; all binary data received equal importance in analysis. If NIR survey questions contained sub-question (e.g. a), b) or c)) then questions were broken down into their constituent components and counted as separate sub-indicators, thus increasing the total number of sub-indicators stated above (66).

The second type of question in the NIR is type of two-dimensional binary assessment, creating a binary grid of responses where ESD is assessed across International Standard Classification of Education (ISCED) levels. Data from these types of questions were typically summarized according to both y and x grouping variables, as defined by the NIR. Data was standardized to create a regional overview of percent (%) implementation. All data were directly supplemented with information contained within the NIR.

For all four countries, sub-indicators left blank in the NIR were quantified as a “no” (I.e a 0) for the present analysis. Data from Greece, Malta and Turkey was extracted from their 2018 NIR. Data from Cyprus is extracted from the country’s 2018 NIR report, which used the 2015 reporting template. For this reason, Cypriot data were always calculated according to the number of factors in the 2015 report and not the 2018 report. No extrapolations or assumptions regarding progress were made with to country responses within the NIR.

Lastly, the third type of questions was a qualitative open-ended question. Answers were not quantified but will be considered and integrated throughout the report whenever necessarily or relevant.

APPENDICES

The appendices containing all supplemental figures are available upon request from the author.