# Learn for our planet

A global review of how environmental issues are integrated in education

**UNESCO – a global leader in education**

Education is UNESCO's top priority because it is a basic human right and the foundation for peace and sustainable development. UNESCO is the United Nations' specialized agency for education, providing global and regional leadership to drive progress, strengthening the resilience and capacity of national systems to serve all learners and responding to contemporary global challenges through transformative learning, with special focus on gender equality and Africa across all actions.

**The Global Education 2030 Agenda**

UNESCO, as the United Nations' specialized agency for education, is entrusted to lead and coordinate the Education 2030 Agenda, which is part of a global movement to eradicate poverty through 17 Sustainable Development Goals by 2030. Education, essential to achieve all of these goals, has its own dedicated Goal 4, which aims to **"ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."** The Education 2030 Framework for Action provides guidance for the implementation of this ambitious goal and commitments.

# Students need more support to learn and act for our planet

2020 was the equal hottest year on record. One million species are at risk of extinction. We use more resources than the planet can generate each year - if we continue to live the way we do today, we will need three earths by 2050. **The way we currently live is not sustainable**. Urgent change is needed, but lasting change is impossible without education.

This publication presents the extent to which environmental issues are integrated in primary and secondary education policies and curricula across 46 UNESCO Member States. Over half of education policies and curricula studied made no mention of climate change. Only 19 per cent made reference to biodiversity. Countries have made progress: 83 per cent of education policies and curricula studied addressed the environment at least once, and 69 per cent mentioned sustainability - but it is clear that more needs to be done to prepare learners with the knowledge, skills, values and attitudes to act for our planet.

Governments, education policy-makers, academics, and education and environmental stakeholders need to further commit to Education for Sustainable Development. Let's ensure learners everywhere are change-makers who learn and act for our planet!

## 45%
**of national education documents studied** made little-to-no reference to environmental themes
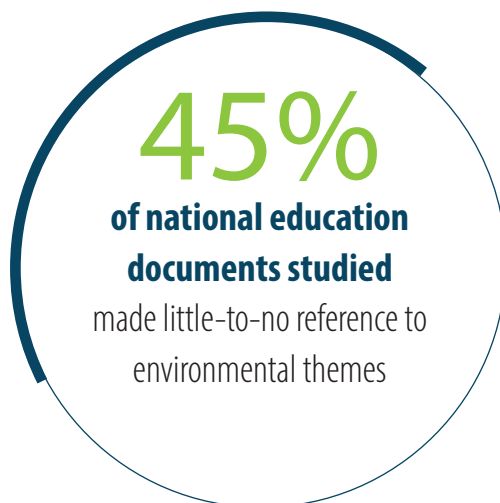
*"Since wars begin in the minds of men and women it is in the minds of men and women that the defences of peace must be constructed."*

# Foreword



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In 2020, UNESCO conducted a global survey asking people to share their views on our world's most pressing challenges and their possible solutions. Despite being in the midst of the first global pandemic in a century, 67 per cent of those surveyed named climate change and biodiversity loss as the number one challenge we face, and education as key to addressing them.

The world has long acknowledged the need to harness the power of education to meet sustainable development challenges, but there is still not enough systematic information on where countries stand on addressing climate change, biodiversity and environment more generally in education systems. To make progress, we must understand where the gaps lie.

This publication was prepared by UNESCO to understand how environmental issues are being integrated into education policies and curricula. A study of national documents from 46 Member States, covering all regions, is complemented with interviews with key education stakeholders and a global survey of educators.

The results are stark: We are not doing enough to ensure that what we learn helps us to address the environmental challenges that we face.

Climate change is affecting every country on every continent, but is mentioned in less than half of the policy and curricula

documents studied. Nature is declining globally at rates unprecedented in human history, yet biodiversity is not reflected in 81 per cent of the analyzed documents. When environmental issues are present, it is almost always in a cursory way, with only a few mentions per policy or curricula document. The publication reinforces that teachers need better training to be agents of change, as part of a whole-sector approach to Education for Sustainable Development (ESD).

Through this publication, UNESCO hopes to provide knowledge, motivation and advice for increasing national and international commitment to our new framework 'ESD for 2030'. This is a roadmap to transform education through action to advance policy, adapt learning environments, build the capacities of educators, empower and mobilize youth and accelerate local level actions. Through global commitment to ESD for 2030, we can empower students with the knowledge, awareness and ability to live and act for a sustainable future.

For the survival of our planet, together we must ensure that we are all learning for our planet.

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# Acknowledgements

# Learn for our planet
## A global review of how environmental issues are integrated in education

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# List of acronyms and abbreviations

| | |
|---|---|
| **ACE** | Action for Climate Empowerment |
| **ASPnet** | UNESCO Associated Schools Network |
| **CCE** | Climate change education |
| **DESD** | United Nations Decade of Education for Sustainable Development |
| **EE** | Environmental education |
| **EFA** | Education For All |
| **ESD** | Education for Sustainable Development |
| **ESP** | Education sector plan |
| **GCED** | Global Citizenship Education |
| **GEM** | Global Education Monitoring Report |
| **ICCS** | International Civic and Citizenship Education Study |
| **IEA** | International Association for the Evaluation of Educational Achievement |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **NCF** | National curriculum framework |
| **NGO** | Non-governmental organization |
| **SDGs** | Sustainable Development Goals |
| **TEK** | Traditional ecological knowledge |
| **UN** | United Nations |
| **UNEP** | United Nations Environment Programme |
| **UNESCO** | United Nations Educational, Scientific and Cultural Organization |
| **UNFCCC** | United Nations Framework Convention on the Climate Change |

# 1. Summary of findings and recommendations

● **Findings**

1. Although 92 per cent of the analysed policy and curriculum documents included at least one reference to environmental themes, the depth of inclusion was very low on average.

2. There was much greater focus on 'environment' than on 'climate change' or 'biodiversity', with 83 per cent of the documents analysed mentioning 'environment' at least once and 69 per cent mentioning 'sustainability', whereas 'climate change' and 'biodiversity' were mentioned in only 47 per cent and 19 per cent of documents respectively.

3. National curriculum frameworks have substantially more references to environment-related topics than education sector plans.

4. There is considerable regional variation regarding the relative extent of inclusion of environment-related content in policy and curriculum documents.

5. The role of environmental laws and intergovernmental programmes and events in advancing national-level policy change is evident through the shifting framings used in education policy.

6. There is a continued focus on learning about climate and other environmental issues, as opposed to also developing the socio-emotional and action competences central for environmental and climate action.

7. Numerous logistical, social and political barriers to inclusion of environmental content in education were identified, suggesting the importance of lifelong learning and how peace and environmental sustainability need to advance together.

8. Over a third of survey respondents indicated no inclusion of environment-related content in teacher training programmes.

9. There is higher inclusion of environmental activities in upper secondary education (in contrast to primary and lower secondary education), apart from nature-based instruction and gardening, which were viewed as prevalent in lower grade levels, amongst the surveyed education stakeholders.

10. The subjects viewed as most likely to include environment-related content were biology, science, and geography; the perception of inclusion in all subjects was quite low.

11. Almost 60 per cent of survey respondents indicated it was very or somewhat common for children and youth to participate in environmental activities beyond formal education, and youth action on environmental issues was considered very common, with most also indicating schools 'allowed and encouraged' children and youth to participate.

12. Most schools had plans to further increase environment-related content and activities in the coming years, according to survey respondents.

## ● Recommendations

→ More emphasis should be given to environmental themes in education, with a particular need to expand integration of climate change and biodiversity.

→ Environmental learning should be integrated across the curriculum, with a holistic pedagogy that goes beyond an exclusive cognitive knowledge focus and aims to engage students socially and emotionally and in action-oriented learning and participation.

→ Education sector plans should include environment-related themes to show high-level prioritization, impact the direction of learning content as well as promote whole-sector approaches to sustainability.

→ All teachers and school leaders should be versed in Education for Sustainable Development, including in relation to environmental education, climate change and biodiversity. They should be prepared to realize their expertise in this area using transformative learning approaches.

→ School engagement with environmental issues should go beyond teaching and supporting environmental action in students, and involve action within schools and by administrators.

→ Indigenous knowledge should be better included in environmental learning, with broad consultation of Indigenous groups.

→ National and intergovernmental environmental and educational actors should better collaborate to raise ambitions and advocate action through global benchmarks, regulations, policies, programmes and events.

# 2. Methodology

This publication starts from the assumption that education must equip learners with knowledge, skills, values and attitudes to address the dramatic interrelated challenges the world is facing – the climate crisis, mass loss of biodiversity, and other environmental and sustainability challenges. UNESCO has been supporting countries to integrate sustainability issues into education through Education for Sustainable Development (ESD), which is an integral element of SDG Target 4.7 and is recognized also as an enabler of all other Sustainable Development Goals.

While knowledge on the progress of countries on ESD and related educational approaches has been increasing, there is still a great need for more in depth understanding of the extent as to which countries address sustainability issues in education – in particular with regard to two of the greatest challenges of our times, climate change and biodiversity loss.

This publication responds to this need. It shares the results of a study reviewing the integration of environmental issues, in particular climate change and biodiversity, in primary and secondary education policies and curricula across the world.

The publication draws on multiple study components. The main component is an analysis of education sector plans and national curriculum frameworks from nearly fifty UNESCO Member States from all UN SDG regions.[1] This is complemented by scholarly and grey literature reviews, interviews with country experts, and a global survey of teachers, principals, and other education stakeholders.

More specifically, data were collected and analysed through the following study components.

● **Study component 1**

**A systematic analysis of education sector plans and national curriculum frameworks.**

In total, 78 documents from a geographically diverse group of 46 countries were studied for key terms that showed focus on environmental themes including sustainability, climate change and biodiversity.

Countries were selected based on the availability of these document types, as well as to balance regional representation. A range of sources was used to collect the documents for

analysis, including various archives and prior studies (see Annex A for a bibliography of the documents analysed). As not all countries had both document types, a total of 37 education sector plans (ESPs) and 41 national curriculum frameworks (NCFs) were analysed.[2]

Keyword searching was used to identify environment-related text in the documents, in clusters of words related to 'environment', 'sustainability', 'climate change' and 'biodiversity'. Steps were taken to reduce the likelihood of identifying more general references to terms such as 'environment' and 'climate' which can have more than one meaning. For example, terms searched included 'environmental' not 'environment' and 'climate change' not 'climate'. This was undertaken using the specialized data information management software NVivo11 for documents in English, French, and Spanish (Table 1) and manual coding for documents in Arabic, Italian, Japanese, Korean, Portuguese and Swedish.

A series of matrix queries enabled analysis of keyword results by document type, region and document language. Results on keyword frequencies were standardized per million words to take into account the respective length of documents.

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1   https://unstats.un.org/sdgs/indicators/regional-groups/

2   For two countries, two distinct national curriculum frameworks, pertaining to different levels of the education systems, were analysed.

**Table 1.**
Environment-related keywords searched, by language

| | English | French | Spanish |
|---|---|---|---|
| **General environment cluster** | environmental<br>ecol* | environnemental<br>ecol* | ambiental<br>ecol* |
| | ecosystem | écosystème | ecosistema |
| **Biodiversity cluster** | biodiversity | biodiversité | biodiversidad |
| **Climate change cluster** | greenhouse | serre | invernadero |
| | global warming | réchauffement climatique | calentamiento global |
| | climate change | changement climatique | cambio climático |
| | climate crisis | crise climatique | crisis climática |
| | carbon | carbone | carbón |
| **Sustainability cluster** | sustainability education | éducation au développement durable | educación para la sostenibilidad |
| | education for sustainability | éducation pour la durabilité<br>éducation pour le développement durable | educación para la sostenibilidad |
| | sustainable development | développement durable | desarrollo sostenible |

### ● Study component 2

**Interviews with education stakeholders with expertise about existing and planned inclusion of environmental issues in primary and secondary education.**

Twenty key informants were interviewed, either from particular countries included in the document analysis component of the study or that could speak to broader regional and global patterns of engagement with environmental issues in education. Interviewees were typically staff in Ministries of Education or of Environment with expertise in the area of lower secondary education and/or whose portfolio includes ESD or environmental education. A small number of additional interviews with academic experts and relevant NGO representatives at the national, regional or global level were also conducted. Interviews were transcribed and are drawn on to add insight and examples to the publication.

### ● Study component 3

**An analysis of nearly 1,600 responses (mainly from teachers and education leaders in primary, secondary and tertiary education) from 93 countries and territories to an online survey.**

An online survey was distributed in three languages (English, French and Spanish) mainly through the UNESCO Associated Schools Network (ASPnet). There were nearly 1,600 respondents during a six-week period in September-November 2020. Significant proportions of respondents - 1,433 out of 1,597 or 92 per cent - were from only three SDG regions: Latin America and the Caribbean (mainly Mexico and Brazil), Northern Africa and Western Asia (mainly Palestine), and Europe and Northern America (mainly the Russian Federation); other regions of Asia, Oceania, and sub-Saharan Africa were less well represented (Table 2).

The uneven distribution of responses by region is a clear limitation of the survey. As such, the findings should be understood as illustrative and not representative of global views on these matters.

It should also be noted that a substantial number of respondents were already familiar with ESD and environmental education (EE) and may therefore not be typical of education stakeholders in general.

**Table 2.**
Regional distribution of survey respondents

| SDG Region | Number of respondents | Percentage distribution |
|---|---|---|
| Central and Southern Asia | 60 | 3.8 |
| Eastern and South-Eastern Asia | 10 | 0.7 |
| Europe and Northern America | 364 | 22.8 |
| Latin America and the Caribbean | 570 | 35.7 |
| Northern Africa and Western Asia | 499 | 31.2 |
| Oceania | 23 | 1.4 |
| Sub-Saharan Africa | 71 | 4.4 |
| Totals | 1,597 | 100.0 |

**Education sector plans are national policy documents, elaborated by governments, which provide a long-term vision for the education system in the country, and outline a coherent set of practicable strategies to reach its objectives and overcome difficulties.**

**National curriculum frameworks are documents that outline overarching national curricular priorities and learning outcomes that cross multiple grade and subject levels.**

Over 72 per cent of participants were teachers and principals, with the remainder consisting of other education stakeholders such as faculty members in higher education, other administrative roles, and civil society organization representatives.

## ● Limitations

Despite a careful document collection and review process, there were some differences in the types of documents used by countries, requiring judgement on which country materials were most equivalent to an education sector plan or a national curriculum framework. In addition, these documents only indicate a point in time of materials in a country, and in some cases more recent materials may have since become available, which could not be included anymore in the study.

The document analysis approach of keyword searching instead of manual coding also has limitations in that, despite best efforts in using a range of search terms and having them translated, some relevant content may be missed due to the use of alternative terms not identified as keyword search terms.

More significantly, these high-level policy materials rarely convey the specificity of content found in grade or subject-level curricula, textbooks, and other teaching guidelines. While aspects of teaching and pedagogy are addressed, in part, by items in the on-line survey, this method also has limitations based on countries and respondents participating.

In these respects, survey data are not representative of each country and UN SDG region. While there was at least one respondent from 93 different countries and territories, the distribution of responses per country was uneven: for 58 countries there were fewer than five respondents, for four countries there were between 80 and 380 respondents, while the remaining cases varied from five to seventy-nine respondents. In addition, total respondent numbers include only a small proportion of educators, administrators and other education stakeholders globally, many of whom were approached through the ASPnet, and do not necessarily provide a comprehensive view of stakeholder perceptions.

The results of the study allow for conclusions about policy and curriculum documents, and somewhat about the inclusion of environmental issues more broadly, in education systems globally, but more analyses are needed to further understand the day-to-day inclusion of environmental issues in schools; across subjects, grades and levels; and with respect to various types of pedagogical practices and activities.

# 3. Review of previous literature

Past UNESCO studies and UN surveys have addressed how environmental issues are being included in various types of policy documents: sector plans and policies, national curriculum frameworks, national or school-based timetables, subject syllabi or curricula, and textbooks (for example, UNESCO MGIEP, 2017). Most studies have concentrated on these document types since they are readily accessible for analysis. Given the links between the intended and implemented curriculum in other subject areas (Kelly et al., 2020), it can be hypothesized that the greater the extent to which environmental content features in official education policy and curriculum documents, the more likely such content will be integrated in lesson plans and classroom instruction. To be sure, teaching and learning about the environment do not necessarily lead to action and behavioural change, but they can hasten and trigger such outcomes.

The World Conference on ESD held in Aïchi-Nagoya, Japan, in 2014, welcomed "the growing international recognition of ESD as an integral and transformative element of inclusive quality education and lifelong learning and an enabler for sustainable development" (UNESCO, 2014a, p.1.). The final report on the UN Decade of ESD (2005-2014), launched at the World Conference, found that by the end of the decade "a solid foundation had been laid for ESD" and that "education systems were addressing sustainability issues and sustainable development agendas and education agendas were converging". This had been achieved "by raising awareness, influencing policies and generating significant numbers of good practice projects in all areas of education and learning" (UNESCO, 2014b, p.9.).

In 1974 UNESCO's General Conference adopted a non-binding resolution called "The Recommendation concerning Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental Freedoms" (hereafter the *1974 Recommendation*). Every four years, UNESCO queried Member States on measures taken to implement the "Guiding Principles" in the *1974 Recommendation* at all levels of formal

education.[3] Some data about the integration of environmental content in educational policy and curriculum can be gleaned from these quadrennial consultations.[4] For example, when countries were queried whether their education policies addressed the "Guiding Principles", including references to 'care for the environment', around sixty per cent of them reported in the affirmative: 59 per cent in 2008 and 61 per cent in 2012 (McEvoy, 2017). These two surveys also found that the percentage of countries indicating that they had a dedicated sustainable development policy, plan, or law in relation to education increased from 5 per cent (2 of 37) to 12 per cent (8 of 57 countries) during the same period.

In order to reflect country commitments to the 2030 Agenda for Sustainable Development, specifically Target 4.7, the structure of the 6th Consultation in 2016 was re-designed to focus on the mainstreaming of ESD and Global Citizenship Education (GCED) in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment in line with the global indicator 4.7.1.[5] Almost all of the 83 participating countries (98 per cent) reported that the Guiding Principles from the 1974 Recommendation were "fully reflected" or "somewhat reflected" in the country's constitution, domestic legislation and education policy

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3   The 1974 Recommendation called on Member States to take legislative or other steps that provide institutional (e.g. policies and systems) and pedagogical (e.g. teacher training, educational materials, equipment, etc.) support for its implementation. These steps should be based on the "objectives", referred to in paragraph 4 of Recommendation, "regarded as major guiding principles": global education perspective, cultural diversity, interdependence, communication, rights and responsibilities, international solidarity and cooperation, and, problem solving, as well as other principles including: cultural diversity and tolerance, equality and non-discrimination, peace and non-violence, justice and fairness, human rights and fundamental freedoms, human survival and well-being, and caring for our planet/sustainability. (For further information see Annex to Document 119 EX/14 Part III (March 2016) UNESCO Executive Board.)

4   The seven consultations conducted by UNESCO, the most recent one in 2020, enquire about relevant actions taken in support of the 1974 Recommendation in terms of policy and planning, learning and training, teacher preparation, educational materials, research and international co-operation. Comparing results across surveys can proceed but cautiously. Although response rates have improved (from 19 per cent in 2008 to 43 per cent in 2016) Member State participation has been erratic: quite a number of states that reported in 2008 declined to do so in 2012. Only a total of 5 states reported in the 3rd, 4th, and 5th Consultations (McEvoy, 2017, p. 8).

5   "Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment."

(UNESCO 2018, p. 5). Regions with the highest rate of full implementation included Europe and North America (69 per cent), Africa (50 per cent) and Asia and the Pacific (50 per cent). In addition, countries reported that the Guiding Principles were not fully supported in their pre-service and in-service teacher training programmes (UNESCO 2018, p. 9). In only 15 per cent of countries were the guiding principles "fully reflected" in pre-service teacher training; three-quarters of countries reported that the Guiding Principles were only "somewhat reflected" in pre-service teacher training (Figure 1).

UNESCO (2018) also explored several key enabling conditions for the effective integration of ESD-related guiding principles. Two conditions – specifically, new educational or pedagogical initiatives; and political or policy prioritization -- were seen to be the most important enablers to bringing about change in ESD inclusion in policy (Figure 2).

**Figure 1.**

Countries reporting on reflection of the 1974 Guiding Principles in pre-service teacher training, by region (in %)
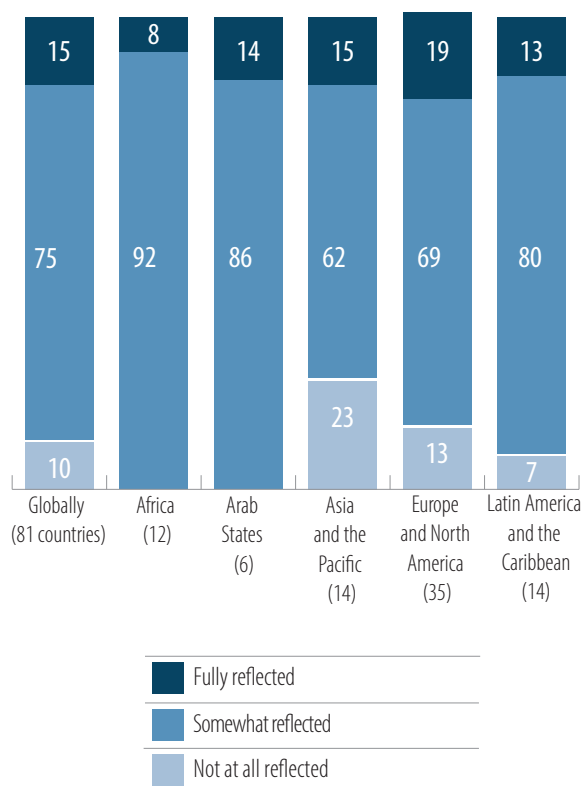


*Source:* UNESCO (2018), p.9.

**Figure 2.**

Countries reporting different enabling factors for implementing the Guiding Principles of the 1974 Recommendation, by region (in %)
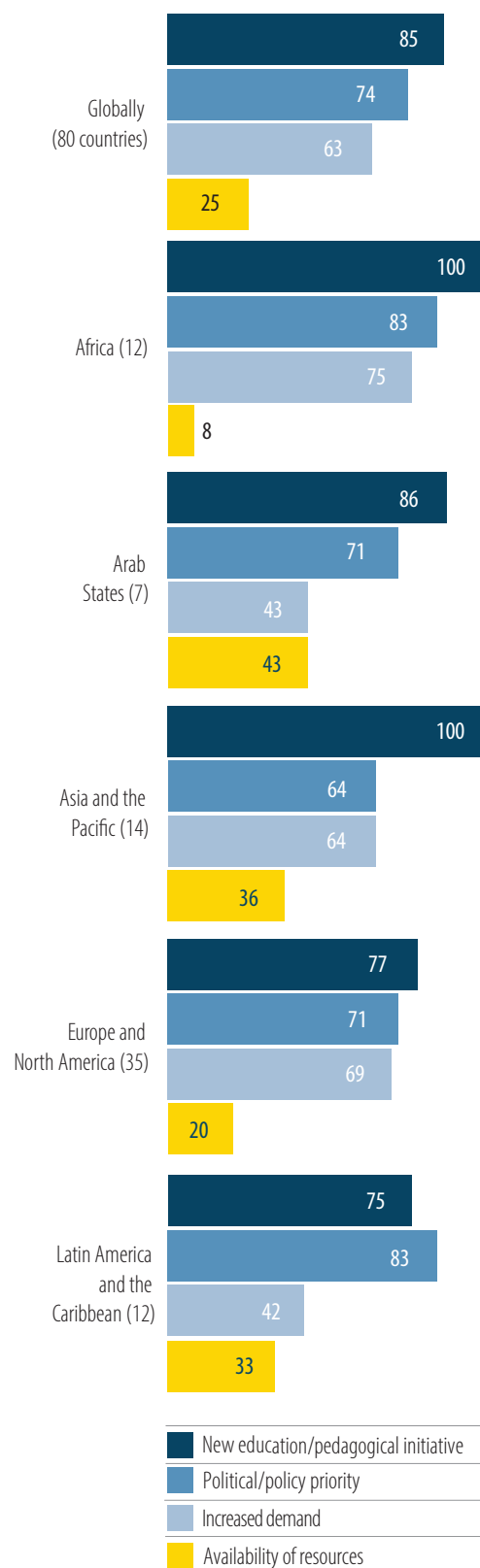


*Source:* Adapted from UNESCO (2018), p. 11.

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Drawing on different data sources, several studies have independently analysed country self-reports to determine the integration of environmental issues in education. For example, countries are required to submit reports as part of the UN Framework Climate Change Convention (1992) and the Paris Agreement (2015), including in relation to Action for Climate Empowerment (ACE) or the six priority areas: education, training, public awareness, public participation, public access to information, and international cooperation (UNESCO & UNFCCC, 2016). An independent content analysis of these country reports found that almost all (95 per cent) countries addressed ACE in some manner in one or more of their submissions to the UNFCCC (UNESCO, 2019a, p. 3). That said, much of the content of country documents was "descriptive or aspirational" in character, making it difficult to determine the extent of what is happening on the ground in countries (UNESCO, 2019a, p. 5). National implementation of policy commitments remains unclear.

Another independent analysis (UNESCO (2019b) of more than 260 official documents (i.e, laws, plans, policies, curriculum frameworks and subject syllabi) in 10 geographically diverse countries reported that there were more than 2000 references to environmental issues (e.g., environmental sustainability, sustainable production and consumption, human survival and well-being and the three pillars of ESD), which represents about one-third of all references to themes captured by SDG Target 4.7 (Figure 3). Across all countries, twice as much focus on GCED (64 per cent) as ESD (32 per cent) was found in education policy and curriculum documents. References to environmental issues were featured more prominently in official documents in Costa Rica, Japan, Mexico, Portugal and Sweden, and less so in Kenya, Lebanon, Morocco, the Republic of Korea and Rwanda.

A study of education policies and curricula in Asia found that "environmental aspects of sustainable development were widely cited, with an emphasis on conservation. However, 'climate change' and 'renewable energy' rated little coverage" (UNESCO MGIEP, 2017).

The study further reported that cognitive learning dimensions are given greater emphasis in references to ESD whereas social and emotional learning features more prominently in relation to GCED (Figure 4). The cognitive dimension receives greater emphasis in the 'social sciences' and 'natural sciences' as compared to 'general' curricula, mainly found in primary education (UNESCO, 2019b, p. 24) The emphasis on the cognitive/academic dimension and the de-emphasis of the social and emotional and behavioural dimensions creates a situation in which students are "able to pass standardized exams on ESD and GCED, but not to develop lasting emotional

commitments or the behavioural skills relevant to applying ESD and GCED" (p. 24).

**Figure 3.**
Percentage of references in different ESD and GCED themes



| | |
|---|---|
| **ALL GCED** | ● Cultural Diversity and Tolerance |
| | ● Peace and Non-Violence |
| | ● Human Rights and Gender Equality |
| **ALL ESD** | ● Environmental Sustainability |
| | ● Sustainable Production and Consumption |
| | ● Human Survival and Well-Being |
| | ● Three Pillars Approach to ESD |
| | ● Other ESD - GCED Content |
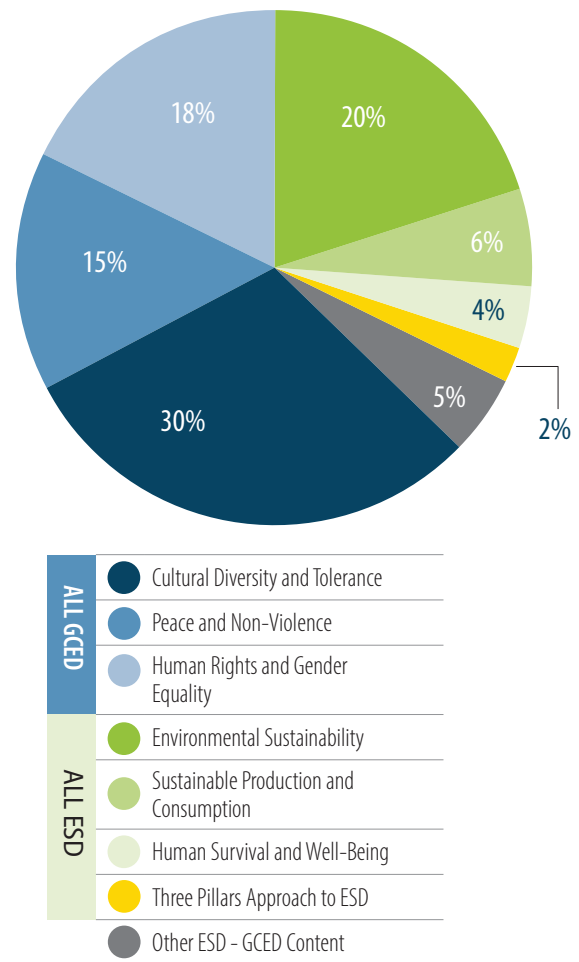
*Source*: UNESCO (2019b), p.24.
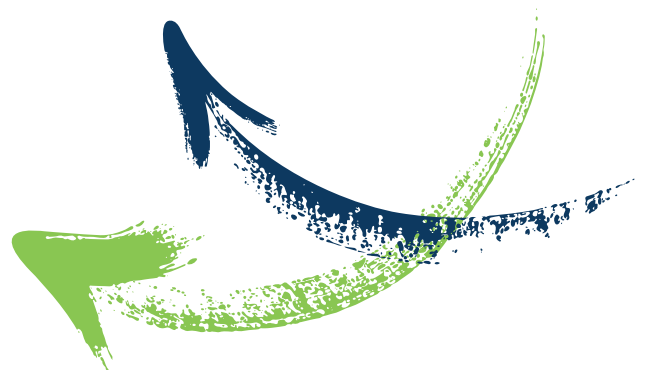
**Figure 4.**

Percentage of references to cognitive, social and emotional and behavioural learning by GCED and ESD content
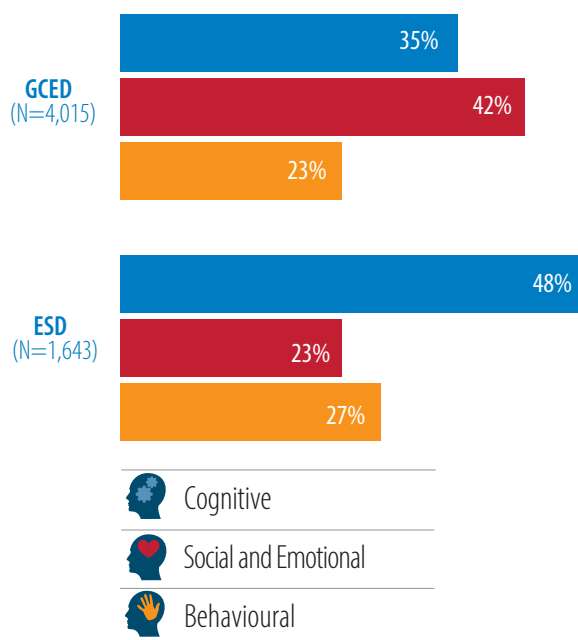


*Source:* UNESCO (2019b), p. 26.

**The integration of environmental issues in the curriculum and in textbooks**

An important reflection of the curricular integration of environmental content can be seen in official curricular timetables. Using country validated information available at UNESCO's International Bureau of Education, historical analyses of official timetables from the 1980s to the 2000s indicate an increasing percentage of countries required instruction in 'environmental education'[6] both in the primary and, to a lesser extent, the lower secondary grades. In the 2000s, about 25 per cent of countries required instruction in this subject in the primary grades (up from 18 per cent in the 1980s) and about 8 per cent in the lower secondary grades (up from 1 per cent in the 1980s).[7] Analyses of official timetables also indicate an increased prevalence of subject electives and options, some of which integrated environmental issues (Benavot 2008).

The analysis of official timetables also indicates that while more countries required instruction in environmental

education in the 2000s (as compared to the 1980s), the proportion of total instructional time devoted to the subject (among the countries requiring instruction) has declined: from 8 per cent-10 per cent in the 1980s to 4 per cent-8 per cent in the 2000s.

More recently, the 4th wave of the Regional Comparative and Explanatory Study (ERCE) of quality education in Latin America and the Caribbean analysed official curriculum documents from 18 countries to determine the inclusion of ESD-related concepts.[8] This study found that the following concepts (in order of prevalence) were present in the documents of over half of the countries: environment, sustainability, biodiversity, resources, disaster risks, critical thinking, health, ecology, participative decisions, contamination, climate change. The top five concepts were also found to be prominent at both the declarative level (i.e., goals, vision and mission of the school) and at the programmatic level (i.e., in learning goals and curricular content) (UNESCO and OREALC/UNESCO Santiago, 2020).

Drawing on country self-reports to the 4th and 5th consultations on the 1974 Recommendation, McEvoy (2017) indicated that 33 per cent of UNESCO Member States reported that ESD was a mandatory part of the curriculum.[9] This includes the fact that instruction in specific aspects of climate change was required in 26 per cent of countries in 2012 – an increase from 14 per cent in 2008.

How environmental education is incorporated into the school curriculum -- whether in a cross-curricular manner or as a stand-alone subject -- is also noteworthy. Almost nine in ten countries (88 per cent) reported that they largely incorporated content related to sustainable development and other elements of Target 4.7 using cross-curricular approaches -- teaching such content across more than one discipline or subject area. Over one-half of countries (57 per cent) reported that they integrate this content as a separate subject (UNESCO 2018, p. 7). Regional variation is noteworthy -- for example, the emphasis on cross-curricular approaches is stronger in Latin America, the Caribbean and Africa, whereas a standalone subject approach is more prevalent in Europe and North America.

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6   In different official timetables this subject was listed as 'environmental studies', 'environmental sciences' 'ecology' or 'environmental education.'

7   Environmental issues may likely have been taught in other subjects which were not labelled as 'environmental education' -- for example, sciences, geography, social studies and agriculture. It was not possible to estimate the extent of such integration from the timetable analysis.

8   Eighteen ESD-related concepts were examined, including: biodiversity, climate change, sustainability, environment, recycling, resources, disaster risks, critical thinking, health, ecology, participative decisions, consumption, economy, green, carbons, imagining future hypotheses, comprehension of complex systems, and contamination

9   In the coding scheme for this paper the author notes that this figure refers to "countries where ESD is mandatory in curricula" [it does not specify at what level this means, such as aspects of syllabi, etc.]. However, it does differentiate this aspect from another aspect, which is "countries where ESD is part of a national educational policy."

**Figure 5.**
Environmental issues in textbooks, 1950-2011

%



Legend:
— Global environmental movement
— Environmental movement
— Global environmental issues
— Environment rights
— Environmental protection or damage
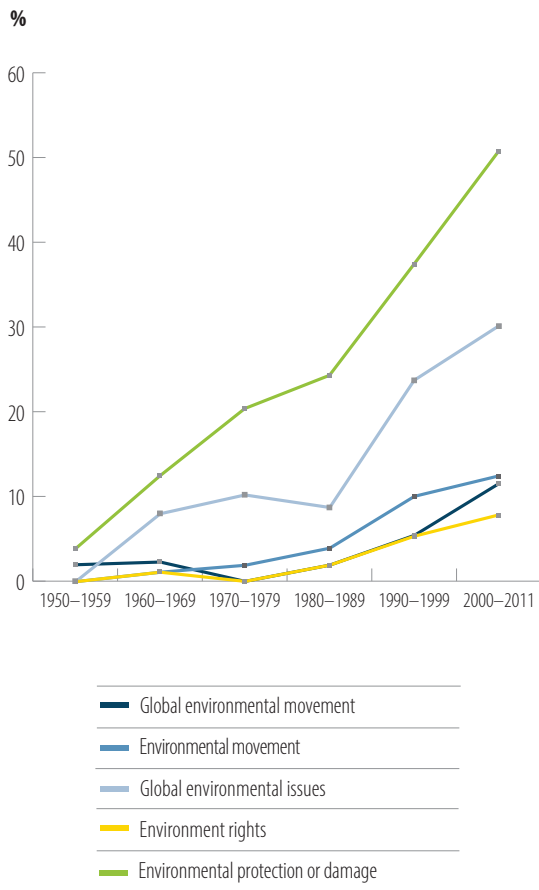
Note: Sample sizes for each period: 54 textbooks over 1950-1959, 88 over 1960-1969, 108 over 1970-1979, 103 over 1980-1989, 139 over 1990-1999 and 219 over 2000-2011.
Source: Adapted from Bromley et al (2016), p.15.

Textbooks provide a valuable window to view the integration of environmental topics in curricular content. Textbooks convey select cultural knowledge and scientific information as well as collective values and political identities. They mediate between intended policy and classroom practice and strongly influence what and how teachers teach (UNESCO 2016a). In many contexts, textbooks are the first and sometimes the only books that young people read.

*Textbooks pave the way to sustainable development*, a policy paper based on the 2016 Global Education Monitoring (GEM) Report (UNESCO, 2016b), examined, in part, the integration of environmental issues in textbooks (UNESCO, 2016a). The paper reported a notable global increase in attention to environmental issues in social science textbooks, mainly at the secondary level. In the 1950s 5 per cent of textbooks mentioned 'environmental protection or damage', whereas 50

per cent did so in the 2000-2011 period (Figure 5). Mention of 'environment rights' and 'global environmental issues' also increased during this time frame, but to a lesser extent. Attention to environmental issues in textbooks has likely continued to increase in the most recent decade, although definitive evidence of this trend is unavailable.

This aforementioned policy paper further notes that textbooks sometimes offer false scientific claims on environmental issues. Problematic or stereotypical images can be found in textbooks. For example, "many photos show people in developing countries as combatants, refugees or individuals in need of help, thus communicating an impression of danger, chaos and passiveness. Efforts by poorer countries such as India to solve their environmental problems are not mentioned" (UNESCO, 2016a, p. 4). Textbooks include few images of the many ways that such nations are actually tackling the effects of climate change. Also, textbooks are often silent about the root causes of climate change – for example, the role of multinational corporations on fossil fuel reliance and consumption patterns, deforestation and forest clearcutting, and carbon emissions.

In a potentially encouraging finding from the GEM 2020 Report, it was found that about 8 in 10 countries are revising textbooks to "deliver the principles [of Target 4.7], although change was constrained by the slow process of curricular reform and textbook development and roll-out" (UNESCO, 2020a, p. 274). Slow textbook development is seen as a key obstacle to progress in Target 4.7, which requires teacher preparation in these content areas (UNESCO, 2020a, p. 290-294).

The International Civic and Citizenship Education Study (ICCS), which was conducted by the International Association for the Evaluation of Educational Achievement (IEA) in 2009 and 2016, also provides information on environment-focused learning (Schulz et al., 2016). The 2016 ICCS included additional items on learning about sustainable development and environmental citizenship than the 2009 assessment. Twenty-four middle- and high-income countries participated in the 2016 ICCS, which compiled information from principals, teachers and the students themselves about student knowledge and understanding of civics and citizenship in lower secondary education as well as opportunities for student-led governance and engagement in environmental activities. About 3 in 5 principals (61 per cent) across all countries stated that there were opportunities for students to get involved in environment-related civic activities.

Finally, UNESCO Member States have also been surveyed about classroom pedagogical practice in relation to environmental content. Case studies of ESD carried out by UNESCO highlighted several countries had established "whole

school" approaches to the integration of ESD (UNESCO 2011a; 2013). Interest in whole school approaches as a strategy to integrate environmental content in schools appears to be growing (Benavot 2014). In response to the 6th Consultation (2016) of the 1974 Recommendation, UNESCO Member States reported on a range of pedagogical approaches. For example, when asked which pedagogies are "used to teach principles related to the implementation of the 1974 Recommendation", countries reported 'learner-centred' pedagogies were the most common engaged (88 per cent of countries), followed by 'participatory/interactive' pedagogies (84 per cent) and 'innovative/creative' approaches (71 per cent) (UNESCO, 2018). Similarly, the recent comparative study of learning dimensions related to ESD mentioned above noted that holistic and whole school approaches in education are found to be particularly effective in ESD integration (UNESCO, 2019b).

**The integration of environmental issues in teacher education**

The extent to which teachers are prepared to teach environmental issues in primary and secondary education is highlighted in several international studies. For example, the 2016 ICCS study on civics and citizenship in lower secondary education reported that nearly half (44 per cent) of the teachers in the 24 participating countries received some training on the environmental content and environmental sustainability. Teacher training on environmental issues varies considerably across countries -- from as low as 16 per cent in Croatia and 27 per cent in Malta and Italy to as high as 82 per cent in Colombia (Wheeler 2019).

UNESCO's survey of Member States in 2012 found that only 7 per cent of countries reported that ESD is mandatory in teacher education (McEvoy, 2017). Findings from the 6th Consultation on the 1974 Recommendation (2016) indicated some improvement (UNESCO, 2018): just over a quarter (28 per cent) of countries reported that their teachers received training in the Guiding Principles, including those related to ESD. Among countries in the latter group, it was reported that from 61 per cent to 80 per cent of their teachers had opportunities to complete the required training. That said, countries rated the quality of this ESD-related training quite poorly (UNESCO, 2018 p. 12).

**More teacher training in environment-related areas is needed, especially in relation to climate change and biodiversity.**

In the 2016 GEM Report, *Education for People and Planet*, data on teacher education programmes in primary and secondary schools were analysed. The Report noted changes "over the past decade in attitudes, acceptance and discourse on education for sustainable development in teacher education" (UNESCO, 2016b, p 297). A survey of 66 country responses in the framework of the UN Decade of ESD (2005-2014) found that self-reported integration of ESD in teacher education rose marginally from 2 per cent in 2005 to 8 per cent in 2013 (UNESCO, 2016b, p. 297). As recently as 2016, only 20 per cent of countries reported that teachers are receiving sufficient preparation time to provide instruction in Target 4.7 themes and topics (UNESCO, 2018, p. 8). So while there is evidence that the integration of environmental issues in education policy and curricula has increased significantly over past decades, reports on teacher education indicate that most teachers are ill-prepared to implement the environment-related education they are being asked to teach by national policy-makers.

Overall, the different sources of evidence suggest that environmental issues are weakly integrated in pre-service and in-service teacher education programmes. Most teachers have received either minimal preparation or no preparation in these content areas. There is certainly room for countries to improve the extent and quality of pre- and in-service preparation in ESD and environmental education, especially in relation to climate change and biodiversity.

**Specialized topics: climate change and biodiversity**

A lack of specific treatment of climate change or biodiversity as specialized topics was evident in most of the international studies reviewed. Given the accumulating evidence of the mass extinction of species (Barnosky et al., 2011) and the 5th Assessment of the IPCC on climate change (IPCC, 2014), this is surprising.

**There is a lack of treatment of climate change or biodiversity as specialized topics, and some textbooks are misrepresenting the science of climate change.**

One of the few sources of comparative information is a special survey conducted by UNESCO in 2011 (Survey on Climate and Biodiversity), which compiled and compared countries' educational efforts related to climate change, biodiversity and disaster risk reduction. More than three-quarters of the 50 countries participating in the 2011 UNESCO survey indicated

that climate change and biodiversity were included into their strategy and national policy documents; in some cases, there were specialized documents in these areas. This study found that climate change was integrated into teachers' curricula in 28 countries in primary education and in 35 countries in secondary education, often in the framework of the subject 'environmental education' and/or 'ESD'. In some cases, coverage of climate change was compulsory (Austria, Bahrain, Cyprus, Seychelles, Uzbekistan). Two countries -- Bosnia and Herzegovina and Madagascar -- reported having developed special manuals for climate change education (CCE) for primary education teachers. In other countries, climate change and biodiversity were transversal issues included in other subject areas -- for example, biology, geography, science. Few countries indicated that either climate change or biodiversity was included in teacher education programmes for either early childhood education or technical and vocational education and training.

The international literature also notes that textbooks can misrepresent the science of climate change, which may undermine collective action as it misinforms young people about the effects of climate change (Kwauk, 2020; UNESCO, 2016a). While this misrepresentation problem exists in relation to climate and some other environmental issues in some countries, the dominant trend is more encouraging. For example, this same paper reported "of 49 civics and geography textbooks used in 2015, the vast majority (73 per cent) discuss the relationship between environmental stress and conflict" (UNESCO, 2016a).

## ● Scholarly studies on the integration of environmental issues in education

This section reviews academic studies regarding the extent and type of integration of environmental issues in education, mainly in formal education. A comprehensive review of the scholarly literature was conducted, primarily written in English and, to a lesser extent, in French and Spanish. The review included articles and academic papers published during the 2014-2020 period which focus on the integration of environmental issues (including climate change and biodiversity) in national and/or sub-national education policies, plans, and school curricula.

**Most common types of education materials analysed**

Across all the articles reviewed, education materials described or analysed within the empirical and non-empirical articles were most likely to be 1) curricula or syllabi, 2) policies, and

then 3) textbooks, and from or about Europe and North America.

The curricula or syllabi analysed in the empirical articles, tended to be at the national level and within the subjects of science and social studies, with international comparative analyses less common (but see Bagoly-Simó, 2014). The non-empirical articles often mentioned debates about cross-curricular versus separate subject approaches. The empirical articles commonly assessed the extent of environmental integration (and related concepts) in curricula and syllabi, as well as focused on (mis)alignments among policy, curricula, and textbooks. The majority of the non-empirical articles focused on curricula and syllabi also tended to focus on the national level. Recommendations or proposals for inclusion of environmental and sustainability education within curricula were also included. The second most commonly analysed or described education document type across the empirical and non-empirical scholarly articles were education policies, typically at the national level, with regional and cross-country comparisons less common. Several non-empirical articles also included recommendations and policy proposals.

Of the articles that reviewed curriculum and policy document content, there was a limited focus on pedagogy (Bieler et al., 2018; Chang & Pascua, 2017) and assessment (Jackson & Pang, 2017; Tal et al., 2016). While there was some mention of using issue, active, inquiry-based, and participatory approaches within the curriculum documents analysed (Ferreira & Molala 2017; Fredriksson et al., 2020), these mentions were few and far between. More often teachers were told to include environmental issues without clear direction as to how this should be done (Hung, 2014) or how students should be assessed (Jackson & Pang, 2017; Tal & Peled, 2016) within curricula and policy documents.

Within the empirical articles focused on curriculum and policy, there was limited analysis of the inclusion of Indigenous knowledge in relation to environmental concerns (but see Meza, 2016; Whitehouse et al., 2014). For instance, Kim & Dionne (2014, p. 311) mentioned that "Despite national strategies to integrate TEK[10], Canada has yet to initiate a comprehensive study of its prevalence and representation within the curriculum". Of the articles that did analyse inclusion of Indigenous knowledge within curriculum and policy documents in relation to environment, some regions were found to have adequate inclusion of Indigenous knowledge (Kim & Dionne, 2014, in some Canadian provinces), but more commonly, inclusion was found to be insufficient, inaccurate, and inadequately connected to the priorities of sustainability (Kim & Dionne, 2014; Whitehouse et al., 2014), with some exceptions (Meza, 2016). There was

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10  Traditional ecological knowledge.

some focus on the importance of climate change including Indigenous knowledge within curricula in the non-empirical articles reviewed.

> **More understanding of the integration of Indigenous knowledge in relation to into education is needed.**

The least common education materials analysed or described across empirical and non-empirical articles were textbooks. Most textbooks discussed were used by particular schools, as opposed to mandated by national or state level governments. The empirical studies analysing textbooks mandated as curriculum most commonly focused on the level of integration of EE and ESD. The non-empirical articles focused on textbooks most commonly described use in national or sub-regional contexts.

### Relative focus on environment, environment, climate change, and biodiversity

Across the empirical and non-empirical articles, the general themes of sustainability and environment were most common, with less emphasis on the more specific areas of climate change and biodiversity.

Within the empirical documents focused on the environment, there was a common focus on relationships with the environment, such as (dis)harmony with the environment, including in relation to economic structures and trends. A strong focus was also included on whether learning within the documents analysed was framed as about, for, and/or in the environment; with about being the most common focus.

The empirical articles finding a focus on sustainability or sustainable development within reviewed documents often included an emphasis on language and the relationship between EE, ESD, and CCE. The articles suggested that the inclusion of ESD within policy documents varies between countries, with some including ESD within cross-curriculum frameworks and others including ESD in guiding principles or subject-specific documents. Within the non-empirical articles, EE was most often mentioned as encompassed within ESD within curricular and policy documents reviewed. Within some articles, this integration was seen as a beneficial continuation, while others raised warning flags and proposed alternatives. Several articles also described national contexts and histories in relation to ESD curriculum and policy.

Reviewed articles suggested that when climate change was included in education policies, plans, and curricula, the mechanism needed for implementation was often lacking. Integration of CCE in policy documents was often achieved through 'soft governance' (e.g., curriculum frameworks and guides) as opposed to mandated regulations or learning outcomes (Bieler et al., 2018; Læssøe & Mochizuki, 2015). Climate change was also not always understood as a multidimensional issue within the policy documents reviewed. For example, the focus on climate change was often narrowed to only include disaster risk reduction, technological solutions, or gaining cognitive competencies (see Bieler at al., 2018; Glackin & King, 2020; Læssøe & Mochizuki, 2015). Within the documents analysed in the empirical articles, justice-related issues were largely absent (but see Gress & Shin, 2016). The non-empirical articles commonly focused on suggestions for including CCE within education policy and curriculum documents, with a focus on climate science and on smart, 'green growth.'

Across our analysis, a scarce engagement with CCE was noted within curriculum and policy documents (Bieler et al., 2018; Hung, 2014; Meehan et al., 2018). When climate change was mentioned, it was often mentioned generally (Læssøe & Mochizuki, 2015) in relation to learning knowledge about climate change as opposed to developing socio-emotional or action competences (Glackin & King, 2020) though there were some exceptions (e.g., in Chile, Philippines, Singapore, South Africa, Viet Nam) (Hung, 2014; Læssøe & Mochizuki, 2015). The majority of the articles found that CCE, EE, and ESD were most commonly included in subject curriculum related to science and social studies (e.g., Chang & Pascua, 2017; Kalali et al., 2019) or authors only analysed curriculum within these subjects (e.g., Bagoly-Simó, 2014; Dube, 2017). Including these environmental concerns within all subjects emphasizes that multiple sources of knowledge and action are needed to address ecological crises as opposed to relying only on scientific or technical solutions (Hornsey et al., 2016).

Compared to climate change, biodiversity was mentioned much less frequently within curricula and policy documents. When biodiversity was mentioned within the documents analysed, it was usually listed as one of the environmental issues covered by CCE, EE, or ESD, as opposed to a more targeted focus. This finding also aligns with a previous review of the literature (see Navarro-Perez & Tidball, 2012). When there was a focus on biodiversity within curricula, policy, and textbooks, inconsistent and outdated definitions of biodiversity were utilized (Bermúdez et al., 2014; Sakir & Kim, 2019), which was attributed by some to an absence of biodiversity in national policy documents (Bermúdez et al., 2014).

There was also a focus on cognition in relation to biodiversity (Glackin & King, 2020) as opposed to using social learning to encourage "'concern' for and relationship[s] with nature" (Navarro-Perez & Tidball, 2012, p. 25). Mentions of biodiversity within the education documents analysed within the empirical articles almost all focused on cognitive comprehension. When biodiversity was included in curricula and policy documents the type of biodiversity mentioned did not always reflect local ecosystems and sometimes felt 'foreign' (Bermúdez et al., 2014; Selby & Kagawa, 2018). Analyses also found a lack of depth in relation to biodiversity in some places, whereas in others, biodiversity was key to addressing climate change. A less common focus was the comparison of biodiversity within secondary textbooks across countries. The non-empirical articles most commonly focused on proposals for inclusion of biodiversity within curriculum, with some consideration of biodiversity within education documents across regions and nations.

A missed opportunity to connect biodiversity to climate change was also noted, with only one empirical article connecting climate change to biodiversity (Reynaga-Pena et al., 2019). While biodiversity loss is directly related to climate change, "approaches to deal with one often neglect the other" (Armarego-Marriott et al., 2020, p. 385). When this happens "global biodiversity and climate objectives may be in poor agreement, or even in conflict" (Armarego-Marriott et al., 2020, p. 385). Beyond the cognitive connection to climate change, elements of 'good' climate change education, such as addressing cognitive, social-emotional, and behavioural ('action') learning dimensions (UNESCO, 2019b) likely also apply to biodiversity education, especially because there are similar, and potentially overwhelming, feelings of loss as well as the need to take action.

In terms of trends of note across SDG regions, curricular and policy documents from South Africa produced in a post-Apartheid context were described as including a stronger focus on social and ecological justice compared to other regions (e.g., Lotz-Sisitka, 2016; Schudel, 2017; Teise & le Roux, 2016). A common focus in the empirical articles from Central and Southern Asia was to analyse national textbooks for inclusion of concepts related to EE and ESD (e.g., Salmani et al., 2015). Within the empirical articles from Eastern and South-Eastern Asia, there was a stronger focus on climate change than in many other regions (e.g., Chang & Pascua, 2017; Hung, 2014; Jackson & Pang, 2017). Curriculum and policy documents from this region also commonly framed EE as an important component of ESD (e.g., Chu & Son, 2014; Han 2015). Within the empirical articles from Oceania, there was some analysis of how Indigenous knowledge was included

in relation to sustainability curriculum. Several articles found that while Australia incorporates sustainability as a cross-curricular priority, this has little impact on actual practices (Nicholls & Thorne, 2018) and is rarely included within the core content areas of English, History, Mathematics, and Science (Gough, 2016). The empirical articles from Europe and Northern America usually focused on the extent to which sustainable development was incorporated across education systems (Veselaj & Krasniqi, 2014), as well as within subject-specific curriculum (Gisselvik et al., 2016; Grice & Franck, 2014; Perpignan et al., 2020; Veinović, 2017). Articles from this region frequently featured in comparative international studies (e.g., Bagoly-Simó, 2014; Elshof, 2015; Gough, 2016; Fredriksson et al., 2020).

# 4. Findings

## Finding #1

**ALTHOUGH 92 PER CENT OF THE ANALYSED POLICY AND CURRICULUM DOCUMENTS INCLUDED AT LEAST ONE REFERENCE TO ENVIRONMENTAL THEMES, THE DEPTH OF INCLUSION WAS VERY LOW ON AVERAGE.**

72 of the 78 documents studied made at least one explicit mention of environmental issues. However, the depth of focus given to environmental themes on each document varies substantially (Figure 6).

A standardized total number of references compared to document length was used to analyse the depth of focus and comparative focus, while taking into account the great diversity in document length, which spanned from over 300,000 words to under 2000. Across all documents, the study standardized references per million words to then compare between themes and categorize depth of focus. The categories used throughout are: no focus (0 out of a million words); very low focus (1-300 words per million words); low focus (301-1000 words per million words); or moderate focus (over 1000 words per million words).

**Figure 6.**
Percentage of documents, by levels of focus on environmental themes



- No focus
- Very low
- Low
- Moderate
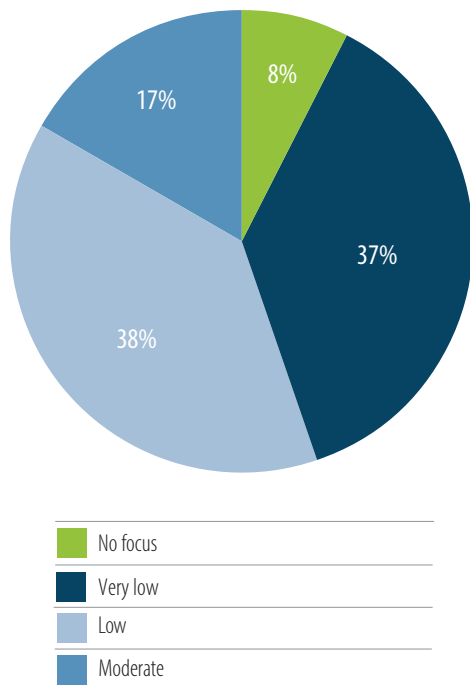
45 per cent of all documents studied had little-to-no focus on environmental themes and only 17 per cent of the documents were in the 'moderate' category

## .Finding #2

**THERE WAS MUCH GREATER FOCUS ON 'ENVIRONMENT' THAN ON 'CLIMATE CHANGE' OR 'BIODIVERSITY', WITH 83 PER CENT OF THE DOCUMENTS ANALYSED MENTIONING 'ENVIRONMENT' AT LEAST ONCE AND 69 PER CENT MENTIONING 'SUSTAINABILITY', WHEREAS 'CLIMATE CHANGE' AND 'BIODIVERSITY' WERE MENTIONED IN ONLY 47 PER CENT AND 19 PER CENT OF DOCUMENTS RESPECTIVELY.**

In the documents analysed, the total number of references to environment outweighed the other clusters considerably (Figure 7).

**Figure 7.**
Standardized number of references, by theme
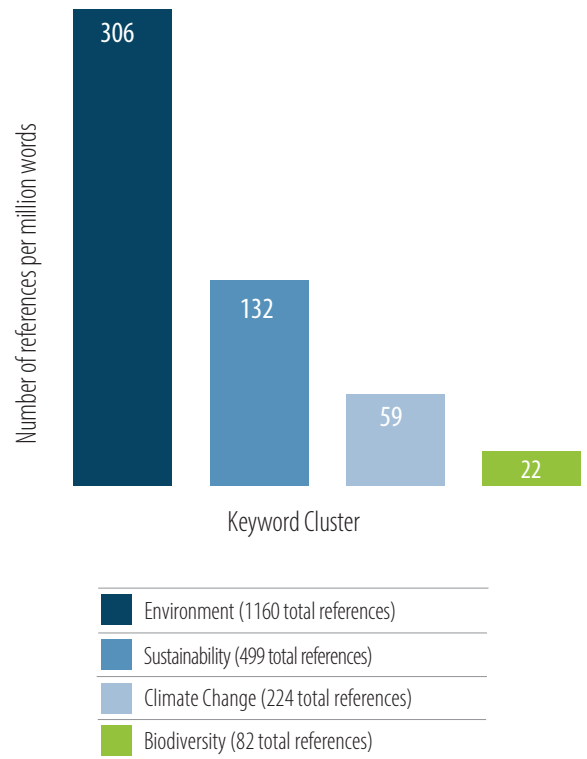


- Environment (1160 total references)
- Sustainability (499 total references)
- Climate Change (224 total references)
- Biodiversity (82 total references)

Although it is to be expected that some themes received more focus than others, there was a low depth of focus across all themes (Figure 8).

**Figure 8.**
Relative levels of focus in documents, by theme
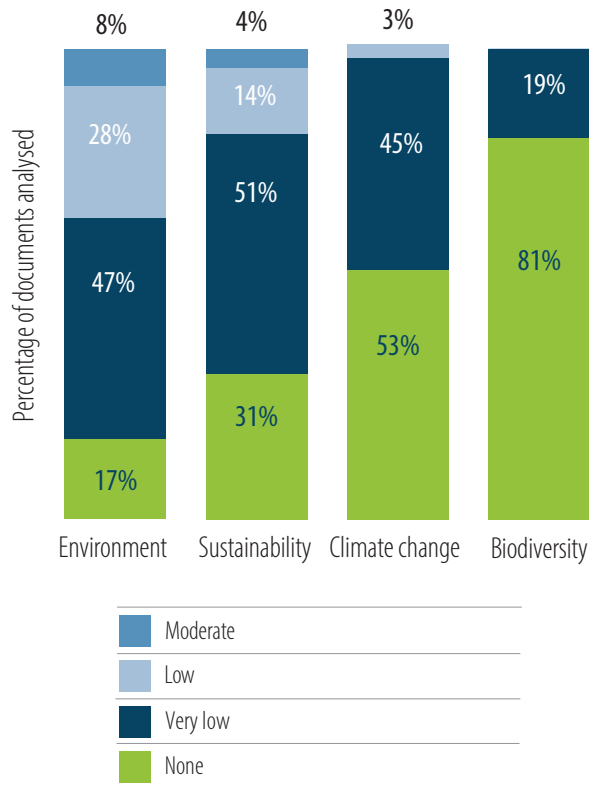


**Figure 9.**
Standardized number of references across all themes, by document type



- Education Sector Plans (486 total references)
- National Curriculum Frameworks (1479 total references)
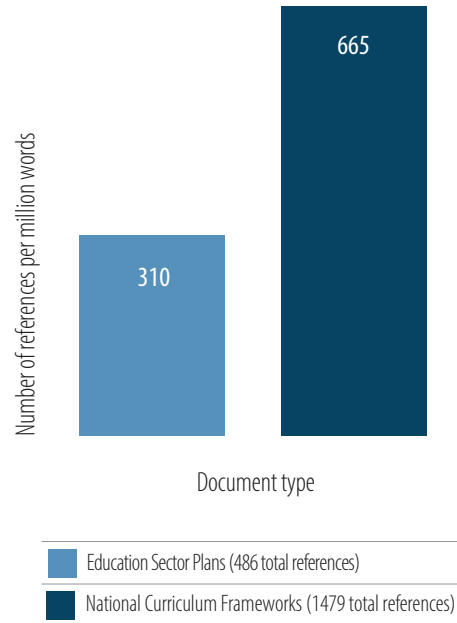
**Finding #3**

**NATIONAL CURRICULUM FRAMEWORKS HAVE SUBSTANTIALLY MORE REFERENCES TO ENVIRONMENT-RELATED TOPICS THAN EDUCATION SECTOR PLANS.**

Of the total references to environmental issues, 25 per cent were found in documents classified as national education sector plans (ESPs, 37 documents) versus 75 per cent in those classified as national curriculum frameworks (NCFs, 41 documents) (Figure 9). Given that NCFs tend to focus on curricular topics, themes and priorities, whereas ESPs tend to be broader, longer-term policy documents articulating a vision for a country's education system and how to achieve it (UNESCO, 2015), it is understandable that the former more often includes specifics of topical intent (i.e., environmental issues).

**Finding #4**

**THERE IS CONSIDERABLE REGIONAL VARIATION REGARDING THE RELATIVE EXTENT OF INCLUSION OF ENVIRONMENT-RELATED CONTENT IN POLICY AND CURRICULUM DOCUMENTS.**

Looking across UN SDG regions, and standardizing for number and length of analysed documents, Latin America and the Caribbean had considerably more environment-related content than other regions, with Eastern and South-Eastern Asia having the least (Figure 10).

**Of the total references to environmental issues, 25 per cent were found in documents classified as national education sector plans [...] versus 75 per cent in those classified as national curriculum frameworks.**

**Figure 10.**

Standardized number of references across all themes, by region

Number of references per million words

| Region | |
|---|---|
| Central and Southern Asia (170 total references) | 309 |
| Eastern and South-Eastern Asia (113 total references) | 228 |
| Europe and Northern America (151 total references) | 495 |
| Latin America and the Caribbean (828 total references) | 825 |
| Northern Africa and Western Asia (132 total references) | 515 |
| Oceania (45 totalr references) | 551 |
| Sub-Saharan Africa (526 total references) | 480 |

Across all regions, most environment-related references in education policy and curriculum documents were to framings of 'environment' in contrast to 'sustainability', 'climate change' or 'biodiversity' (Figure 11).

Teachers, principals, and other education stakeholders were provided with a more detailed breakdown of topical issues in the survey. On average about two-thirds to three-quarters of them indicated that water, biodiversity, climate change, air pollution, land protection and sustainable consumption were "well integrated" or "partially integrated" in the schools with which they were familiar (Figure 12).
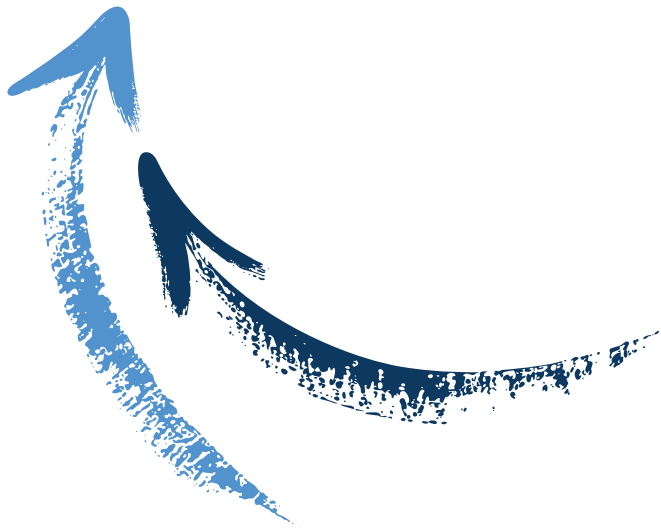
**Figure 11.**

Standardized number of references, by theme and region

Number of references per million words

| Region | Environment | Sustainability | Climate change | Biodiversity |
|---|---|---|---|---|
| Central and Southern Asia (170 total references) | 174 | 89 | 38 | 7 |
| Eastern and South-Eastern Asia (113 total references) | 129 | 79 | 10 | 10 |
| Europe and Northern America (151 total references) | 256 | 108 | 82 | 49 |
| Latin America and the Caribbean (828 total references) | 556 | 153 | 76 | 41 |
| Northern Africa and Western Asia (132 total references) | 343 | 164 | 4 | 4 |
| Oceania (45 total references) | 294 | 196 | 61 | 0 |
| Sub-Saharan Africa (526 total references) | 230 | 152 | 83 | 15 |

- Environment
- Sustainability
- Climate change
- Biodiversity

**Figure 12.**
Extent of integration of environmental themes in schools
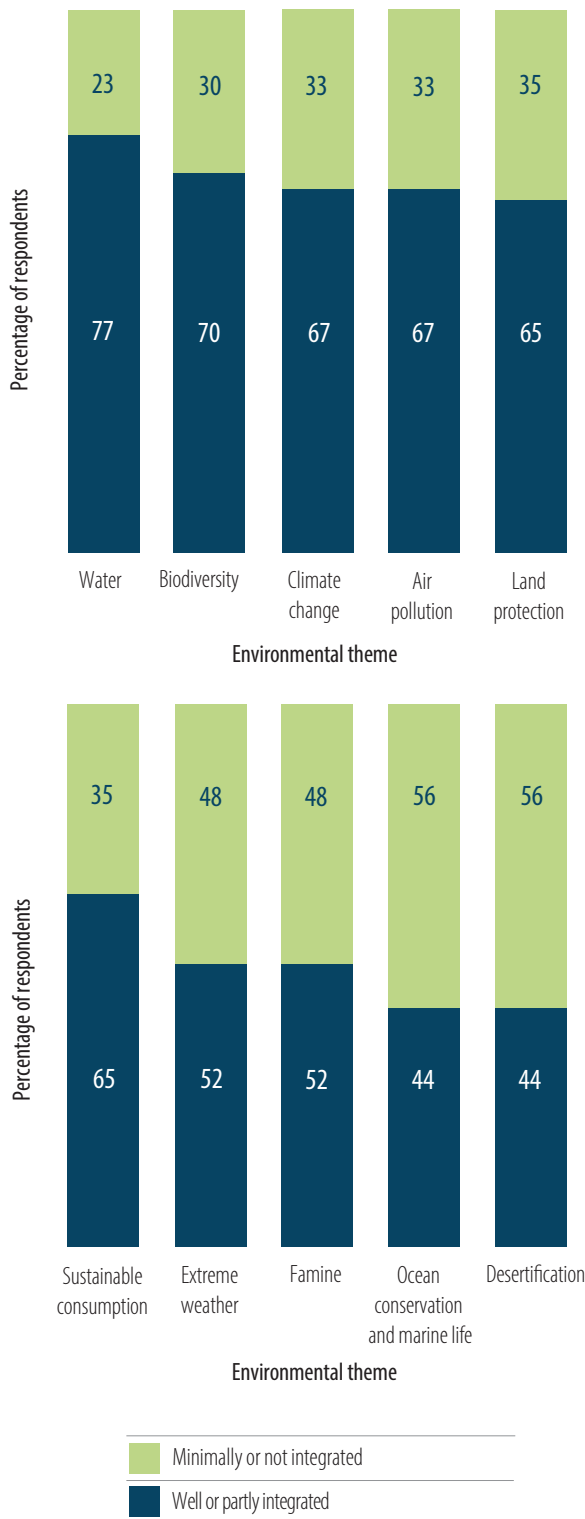


## Finding #5

**THE ROLE OF GOVERNMENTAL ENVIRONMENTAL LAWS AND INTERGOVERNMENTAL PROGRAMMES AND EVENTS IN ADVANCING NATIONAL-LEVEL POLICY CHANGE IS EVIDENT THROUGH THE SHIFTING FRAMINGS USED IN EDUCATION POLICY.**

Interviewees placed considerable emphasis on the significant role that intergovernmental agencies and international events - in addition to national environmental laws - had played in creating momentum to insert a greater environmental focus in primary and secondary education systems. They mentioned the value of prior initiatives such as the UN Decade of ESD, as well as ongoing activities such as international meetings and SDG monitoring and target-setting.

## Finding #6

**THERE IS A CONTINUED FOCUS ON LEARNING ABOUT CLIMATE AND OTHER ENVIRONMENTAL ISSUES, AS OPPOSED TO ALSO DEVELOPING THE SOCIO-EMOTIONAL AND ACTION COMPETENCES CENTRAL FOR ENVIRONMENTAL AND CLIMATE ACTION.**

Interviewee suggestions of an imbalance in learning dimensions -- a stronger emphasis on cognitive learning and a weaker emphasis on social-emotional and action-oriented learning -- aligns with prior studies (e.g., UNESCO, 2019b, Glackin & King, 2020). Despite this, most interviewees emphasized the crucial importance of action-focused activities in environmental learning, including through participating in action projects and other types of interactive and holistic pedagogies. They suggested individual teachers and schools, as well as eco school programmes, were taking a lead in integrating these approaches, often making up for gaps in inclusion of an action focus in the official curriculum. This could explain why survey respondents indicated the high frequency with which students participate in school-based action on environmental issues. The disjuncture between the type of learning conveyed in the intended curriculum and what teachers, experts and presumably students understand to be profound deserves greater attention from national education leaders as they consider how best to integrate environment-related content in the curriculum and in pedagogy. Holistic curriculum and pedagogy that engages across cognitive, socio-emotional, and action dimensions is critical for developing learners that are knowledgeable, competent, hopeful, and engaged.

## Finding #7

**NUMEROUS LOGISTICAL, SOCIAL AND POLITICAL BARRIERS TO INCLUSION OF ENVIRONMENTAL CONTENT IN EDUCATION WERE IDENTIFIED, SUGGESTING THE IMPORTANCE OF LIFELONG LEARNING AND HOW PEACE AND ENVIRONMENTAL SUSTAINABILITY NEED TO ADVANCE TOGETHER.**

Various social and political barriers were noted in interviews and in responses to open ended survey questions, as exemplified in the text boxes below. Obstacles highlighted included a lack of support for environmental learning and action at home and in school culture more broadly, and political conflict between and within countries which undermines nature-based learning and student ties to the environment. Additional challenges raised included resource limitations, overcrowded classrooms, the emphasis on grades and competition, the range and interdisciplinarity of content for teachers to cover, lack of teacher training in climate change and biodiversity education, as well as high rates of early school leaving.

> *Sustainability is cross-curricula perspective in the Australian curriculum, but has been neglected due to many issues but particularly overcrowded curriculum and excessive extra-curricular activities which dominate our schools.*
>
> — Survey respondent, Australia

> *There are no detractors. Nobody, nobody is resisting, but only some of the people, they argue that the students are being bombarded by a huge volume of content. There are some psychologists, there are some people who are related to education: they are worried that our children are very young, they take too much load. They are given so many things in their textbooks, they are given how to play badminton, they are given how to protect our environment.*
>
> — Interviewee, Bangladesh

## Finding #8

**OVER A THIRD OF SURVEY RESPONDENTS INDICATED NO INCLUSION OF ENVIRONMENT-RELATED CONTENT IN TEACHER TRAINING PROGRAMMES.**

62 per cent of all survey respondents were teachers, and an additional 13 per cent were principals (and usually prior teachers). Overall, 36 per cent of all respondents indicated no inclusion in either pre-service (to become a teacher) or in-service (once a teacher) training, while 30 per cent indicated that environmental issues are included in both pre- and in-service training (Figure 13). This conclusion was supported by the review of other studies in this area conducted as part of the literature review.

> *To be honest, 100% honest, while everybody gives lip service to ESD, it's not at the very top of the agenda... there's a lack of translation of generalized learning outputs for ESD into specific subject-based ESD learning outcomes. That is still missing and obviously teachers are at a loss.*
>
> — Interviewee, Malta

> *There is something really missing in the work done by the Ministry of Education – the training and support of the teachers [to cover new curriculum in biodiversity and climate change]… Climate change is completely new for a lot of them. It requires lots of knowledge on climate sciences, and then it requires a lot of interdisciplinarity and this is the thing that is very difficult in our school system.*
>
> — Interviewee, France

**Figure 13.**

Inclusion of environmental themes in teacher training (% of respondents)

Environmental themes and teacher training

## 36%

**Not included** in any teacher training

## 30%

**Included** in **both** pre-service and in-service teacher training

## 19%

**Included** in pre-service teacher training only

## 15%

**Included** in in-service teacher training only

When asked about the types of environmental topics included, there was minimal variation between pre- and in-service training and among topical areas (Figure 14).

**Figure 14.**

Environmental themes in teacher training, by theme and type of training

| Theme | Not covered | In-service | Pre-service |
|---|---|---|---|
| Climate change | 20 | 41 | 39 |
| Water | 21 | 40 | 40 |
| Biodiversity | 25 | 40 | 35 |
| Air pollution | 26 | 38 | 37 |
| Land protection | 29 | 36 | 34 |

*Percentage of respondents*

| Theme | Not covered | In-service | Pre-service |
|---|---|---|---|
| Sustainable consumption | 30 | 39 | 31 |
| Famine | 35 | 34 | 31 |
| Extreme weather | 37 | 34 | 29 |
| Desertification | 38 | 33 | 29 |
| Ocean conservation and marine life | 39 | 33 | 28 |

*Percentage of respondents*

- Not covered
- In-service
- Pre-service

## Finding #9

**THERE IS HIGHER INCLUSION OF ENVIRONMENTAL ACTIVITIES IN UPPER SECONDARY EDUCATION (IN CONTRAST TO PRIMARY AND LOWER SECONDARY EDUCATION), APART FROM NATURE-BASED INSTRUCTION AND GARDENING, WHICH WERE VIEWED AS PREVALENT IN LOWER GRADE LEVELS, AMONGST THE SURVEYED EDUCATION STAKEHOLDERS.**

This aligns with findings of the UNESCO (2019b, pp. 13-14) 'Education Up Close' study, which found more content related to environment and citizenship topics in upper secondary and lower secondary education than in primary or pre-primary education. It also found a shift to more cognitive and action-oriented learning in higher grade levels. However, the overall trends towards a perception of increased environmental activity in later grades was not universal across participants.

## Finding #10

**THE SUBJECTS VIEWED AS MOST LIKELY TO INCLUDE ENVIRONMENT-RELATED CONTENT WERE BIOLOGY, SCIENCE, AND GEOGRAPHY; THE PERCEPTION OF INCLUSION IN ALL SUBJECTS WAS QUITE LOW.**

All relevant subjects taught at the lower-secondary level were viewed by at least some participants as including some environment-related content (Figure 16). However, a maximum of 23 per cent of respondents indicated inclusion of environmental issues in any one subject, indicating much scope for increased inclusion of environmental themes and activities across all subject areas.

## Finding #11

**ALMOST 60 PER CENT OF SURVEY RESPONDENTS INDICATED IT WAS VERY OR SOMEWHAT COMMON FOR CHILDREN AND YOUTH TO PARTICIPATE IN ENVIRONMENTAL ACTIVITIES BEYOND FORMAL EDUCATION, AND YOUTH ACTION ON ENVIRONMENTAL ISSUES WAS CONSIDERED VERY COMMON, WITH MOST ALSO INDICATING SCHOOLS 'ALLOWED AND ENCOURAGED' CHILDREN AND YOUTH TO PARTICIPATE.**

Only 8 per cent of survey respondents reported that it was not common at all for students to participate in environmental activities out of school (Figure 17).

As the examples in the text box attest, these activities can vary in focus and in the types or civil society organization or other entities doing the coordination.

**Figure 15.**
Environmental activities occurring at least a few times a year, by level of education



Percentage of respondents

| Activities | Primary | Lower secondary | Uper secondary |
|---|---|---|---|
| Nature-based instruction and nature learning | 57 | 60 | 53 |
| Action projects on environmental issues | 41 | 58 | 67 |
| Community and place-based learning | 45 | 57 | 56 |
| Recycling, environmental audits, or other learning activities related to the environmental footprint of the school | 49 | 60 | 63 |
| Field trips on environmental themes | 49 | 51 | 57 |
| Tending to school or community gardens | 51 | 55 | 51 |
| Visits or activities with environmental non-profit or community organizations | 39 | 56 | 62 |
| Eco-school or other environmental certification programme activities | 38 | 51 | 60 |
| Environmental clubs | 37 | 55 | 60 |

**Figure 16.**
Inclusion and exclusion of environmental themes in lower secondary education, by subject



Percentage of respondents

| Biology | General science | Geography | Social science | Civics/citizenship education | Chemistry |
|---|---|---|---|---|---|
| 14 | 15 | 18 | 27 | 40 | 25 |
| 64 | 63 | 60 | 58 | 47 | 64 |
| 3 | 2 | 3 | 3 | 3 | 2 |
| 20 | 20 | 19 | 13 | 10 | 9 |

Themes integrated in the following subject



Percentage of respondents

| Physics | Moral education | Language and literature | History | Mathematics |
|---|---|---|---|---|
| 25 | 52 | 20 | 25 | 18 |
| 65 | 37 | 70 | 67 | 78 |
| 2 | 4 | 1 | 1 | 1 |
| 9 | 7 | 9 | 6 | 4 |

Themes integrated in the following subject

- ▮ Environment themes excluded, subject not compulsory
- ▮ Environment themes excluded, subject compulsory
- ▮ Environment themes included, subject not compulsory
- ▮ Environment themes included, subject compulsory

**Figure 17.**
Frequency of student participation in environmental activities beyond formal education



8% Not common

32% Not particularly common

39% Somewhat common

22% Very common
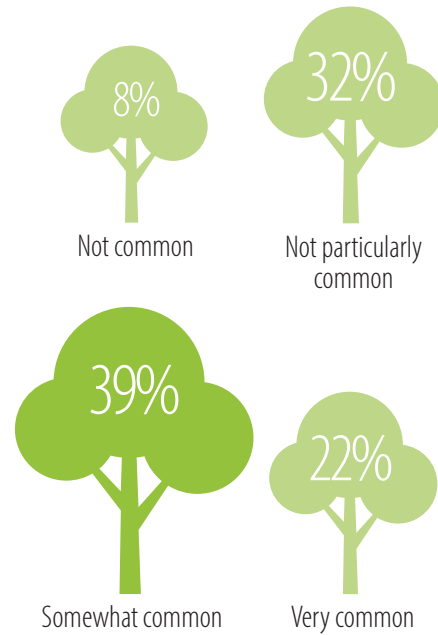
*I am the founder of SDGs Youth Football Club in Nigeria. We use the SDGs Youth Football Club to organize football tournaments for children and youth, and also embark on strategic advocacy and create awareness about education for sustainable development (ESD) and the 17 Sustainable Development Goals (SDGs). The club members also pick single-used plastics from the stadium and during jogging on the road.*

— Survey respondent, Nigeria

*Young people get involved in after-schools initiatives e.g. ECO-UNESCO Clubs Ireland run an after school youth for sustainable development programme - a regular youth group for 15-19 year olds. We also run a Young Environmentalist Awards encouraging young people to carry out local environmental action projects both in schools and in out of schools settings.*

— Survey respondent, Ireland

When asked about the extent to which young people participated in school-based action on environmental issues, 35 per cent of respondents reported that the frequency of youth action was either once a week or once a month (Figure 18). Another 57 per cent reported the frequency as at least once a year. Only 8 per cent of respondents indicated no participation on the part of youth. This high level of action is an interesting and surprising global finding, perhaps reflecting the impact of recent youth action and school strikes on climate change and other environmental issues as well as the fact that many survey respondents come from environmentally-active schools.

**Figure 18.**
Frequency of participation in youth action on environmental issues

8% Not all all
12% Once a year
45% A few times a year
20% One a month
15% Once a week
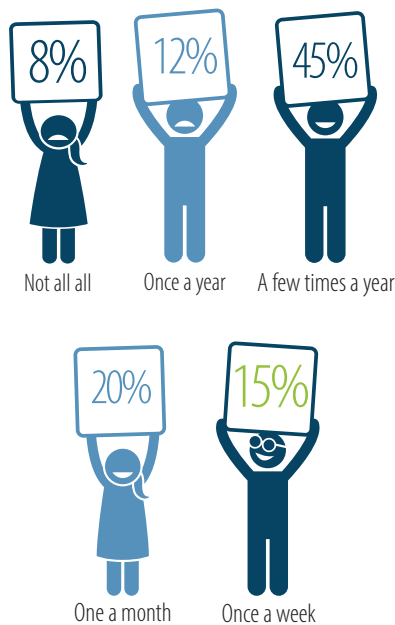
Overall, 79 per cent of respondents reported that schools they are familiar with have 'allowed or encouraged' children and youth to participate in youth action on environmental issues (4 per cent said they were discouraged, and 17 per cent neither encouraged nor discouraged) (Figure 19).

**Finding #12**

Most schools had plans to further increase environment-related content and activities in the coming years, according to survey respondents.

Over 73 per cent of respondents indicated expected increases in environment-related content and activities in the next year or two (Figure 20).

**Figure 19.**
Extent to which schools encourage students to participate in environmental activities

79%
**Encouraged** students to participate in environmental activities

17%
**Neither encouraged nor discouraged** students to participate in environmental activities

4%
**Discouraged** students to participate in environmental activities
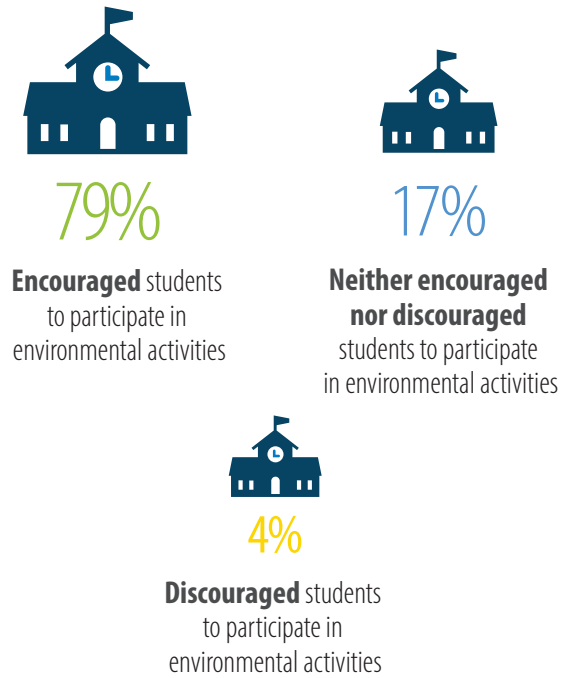
**Figure 20.**
Do schools have plans to increase environmental activities in next year or two? (% of respondents)

73%
**Have plans**
to increase environmental activities in the next year of two

27%
**Have no plans**
to increase environmental activities in the next year of two

# 5. Regional snapshot

The following analysis highlights two countries from each UN SDG region, with results from the document analysis aspect of the study, as well as in some cases, interview responses. The figures demonstrate a diversity of framings of environmental issues across the countries, as well as a range of levels of inclusion (as indicated by the total number of references provided in the figure as the 'n' numbers).

## ● Central and Southern Asia

Bangladesh and India each had both an ESP and NCF included in the document analysis. While Bangladesh had fewer references to environmental issues than India (see n numbers in figure), when standardized for the length of their documents, the rates of inclusion were very similar, at about half the average number of references to environmental issues across all documents (Figure 21). In terms of framing, as seen below, India dominantly used environment terminology, where Bangladesh most frequently included a focus on climate change in its high-level education policy and curriculum documents. This difference in framing was reflected in the interviews with representatives from these countries.

An interviewee from Bangladesh emphasized the collaboration between the Ministries of Environment and Education in Bangladesh on advancing climate action through education, stating: "especially we want to make our young generation a climate friendly generation." To achieve this, the interviewee indicated the inclusion of climate change in the curriculum in every grade from grade 3 to 10, with dedicated chapters in the required textbooks for topics of "climatic factors and environmental issues" as well as related civic and citizenship issues regarding taking action on environmental issues. They further commented on the climate change focus: "at the moment, we are also giving preference to adaptation with mitigation action". This was discussed as being due to Bangladesh being a low emitting country that is suffering greatly already from climate change, and thus adaptation is a greater priority than reducing their own limited emissions. The interviewee linked the decision to include environmental issues in the curriculum to the fact that "Bangladesh is prone to natural calamities" and thus "the committee has taken a decision that these things should be covered." The interviewee also noted that biodiversity is "in different chapters of different textbooks. We are now very serious about biodiversity." They

go on to link this change to Bangladesh being a signatory to the Convention on Biodiversity (as well as of the UN Framework Convention on Climate Change), and thus wanting to increase youth awareness of these issues.

**Figure 21.**
Distribution of references to environmental issues in education sector plans and national curriculum frameworks, Bangladesh and India
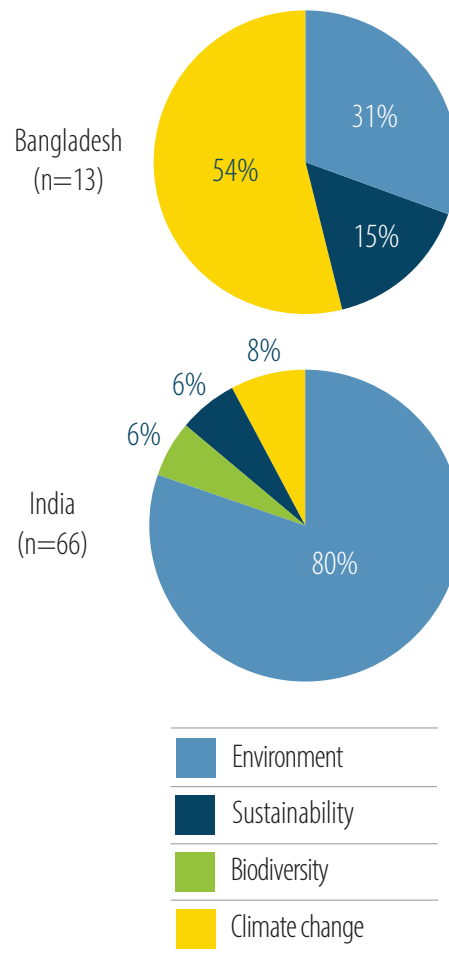
## Eastern and South-Eastern Asia

For Eastern and South-Eastern Asia, an NCF for Japan was included in the study, as well as both document types for Cambodia, with the former mainly using the language of environment and the latter focused on sustainability framing (Figure 22). All three documents had relatively low levels of references relative to the standardized average of the study materials.

**Figure 22.**
Distribution of references to environmental issues in education sector plans and national curriculum frameworks, Cambodia and Japan
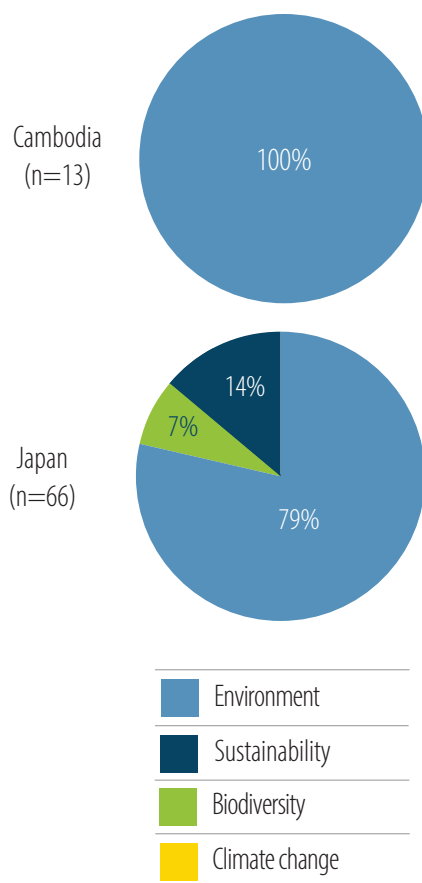


The interviewee from Japan indicated that environmental education is stipulated in the National Curriculum Standards, as part of what is taught throughout each subject. For example, the 2017 and 2018 revised National Curriculum Standards include the preamble, "To cultivate an attitude that respects life, values nature, and contributes to environmental conservation." Boards of education, found in prefectures and municipalities, are required to provide in-service teacher

training, with around 75 per cent of schools receiving teacher training related to environmental education for new teachers, and between 22-30 per cent for mid-career teachers, depending on the education level.

## Europe and Northern America

We profile Czechia, Italy, and Malta in Europe and Northern America, with Malta having both document types in the study and Czechia having an NCF included. Malta had no references in their ESP, but both countries' NCFs had high numbers of environment-related references relative to the standardized average (Figure 23). Czechia mainly used a framing of environment, whereas in Malta, sustainability was slightly more common.

**Figure 23.**
Distribution of references to environmental issues in education sector plans and national curriculum frameworks, Czechia and Malta
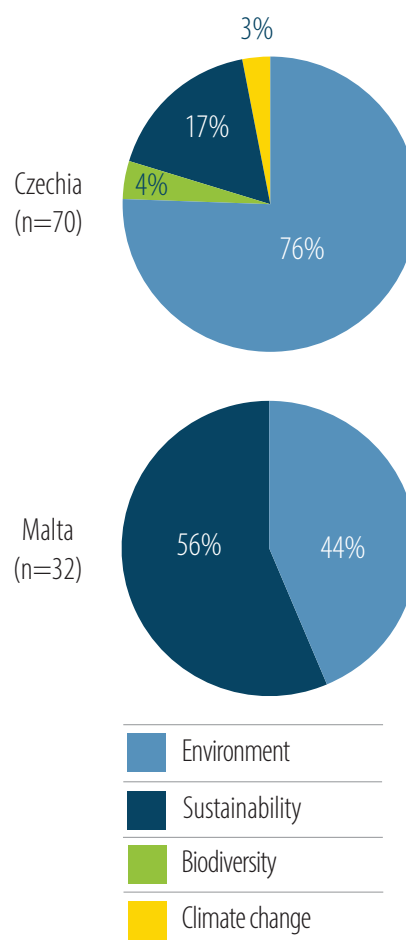
The interviewee from Malta reported on how the terminology had shifted from environmental education to education for sustainable development over the past three decades, as reflected in over half the references in the Maltese documents being related to sustainability vs environment (56 per cent vs 44 per cent). He spoke of the introduction of ESD in the Maltese National Curriculum and a National Strategy for ESD, and how international conferences and UN initiatives have been key to the development of an environment-related focus in the education system. Another factor in advancing ESD, particularly in schools, was the introduction of the Eco-Schools programme in Malta starting in 2002: "That was, I think, the real catalyst that started off the awakening of a lot of interest in ESD." With 84 per cent of the Maltese student population now participating in the programme, from kindergarten to post-secondary education, its impacts are viewed as significant in terms of engaging students and educators in environmental activities and learning.

Over the years, the Italian education system has increased its commitment to environmental themes in formal education. Environmental education and climate change education are mostly included in civic education which was first introduced in 1958. In 2015, the Ministry of Environment, Land and Sea together with the Ministry for Education, University and Research updated the *Guidelines for Environmental Education and Sustainable Development*, first published in 2009 and in 2019, Italy passed a law making ESD compulsory for every student in primary and secondary education. Thus, since September 2020, all Italian students aged 6 to 19 are expected to participate in school projects promoting knowledge, skills, attitudes and values for protecting the environment and the planet.

A survey conducted by the Intercultural Foundation and Ipsos in 2020 showed that the teaching of civic education is considered a priority and its value is recognized by 97 per cent of school directors and 93 per cent of students. Despite the Covid-19 emergency, 80 per cent of school directors report having introduced the new curriculum in at least one class and 46 per cent in all classes (Fondazione Intercultura Onlus and Ipsos, 2020).

● **Latin America and the Caribbean**

Costa Rica and Mexico had both document types included in the study, with above average standardized number of references in each case, particularly for Costa Rica's NCF at six times the average number of references. The framing of environment was mainly used in Mexico, with Costa Rica split between sustainability and environment; with both countries having some references to biodiversity and climate change (Figure 24).

**Figure 24.**

Distribution of references to environmental issues in education sector plans and national curriculum frameworks, Costa Rica and Mexico
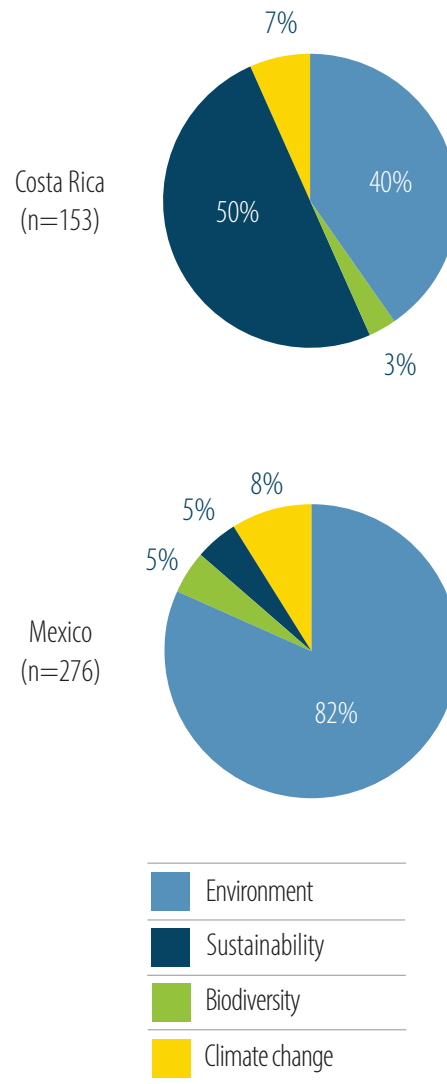


The Costa Rican interviewee discussed how current education policies promote Education for Sustainable Development (ESD), with sustainability included in the curriculum across disciplines. ESD topics in the curriculum range from gender equality and cultural diversity to biodiversity and climate change education. The launching of the Sustainable Development Goals was discussed as a milestone event for the focus on sustainability in the country.

Environmental education has a long history in Mexico. It was one of the first countries to establish a law for the inclusion of climate change in formal education. The 2012 *General Law on Climate Change* as updated states in Article 7 part XI that Mexico will:

*"Promote education and dissemination of culture on climate change at all educational levels, as well as carry out education and information campaigns to sensitize the population about the causes and effects of climate variation"* (Mexico, 2020, p.7).

Since 2017, climate change has been included throughout the national curriculum framework for upper secondary schools. Students are not only taught about climate change and its effects, they also learn what action they can take against climate change.

### ● Northern Africa and Western Asia

Morocco and Oman had both document types included in the study, with standardized references being above average for both countries' NCFs, particularly Morocco's (Figure 25). Whereas Morocco's materials mainly used the framing of environment, Oman's were almost equally split between environment and sustainability terms.

The Moroccan interviewee spoke of a number of initiatives, such as the Young Reporters for the Environment, the Eco-School Programme, a new Global Schools programme implemented by the Hassan II International Centre for Environmental Training, the academic branch of the Mohammed VI Foundation for Environmental Protection, an environmentally exemplary building with a commitment to be a regional hub in African, Mediterranean and Arab world, for Education for Sustainable Development, as well as education in the environment and sustainable development occupying a "privileged place" in the school curriculum. The Moroccan interviewee also discussed efforts to map and align the curriculum in relation to the SDGs. The SDGs on climate change (SDG 13) and biodiversity (SDG 15) are both addressed within the Moroccan curriculum. The interviewee also pointed to the role of the Mohammed VI Foundation for Environmental Protection in hosting many regional and international events related to sustainable development, including collaboration with key UN agencies such as the UNFCCC (e.g., hosting an Action for Climate Empowerment workshop in Morocco in 2018).

**Figure 25.**

Distribution of references to environmental issues in education sector plans and national curriculum frameworks, Morocco and Oman



Environment

Sustainability

Biodiversity

Climate change
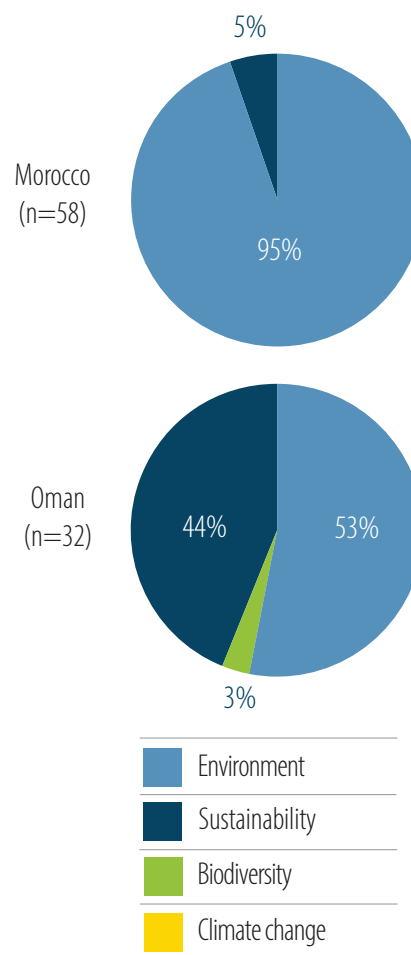
### ● Oceania

From Oceania, New Zealand has both document types, with a few references in the NCF only (note that only a Maori-language NCF versus a second English NCF were analysed) (Figure 26). Tuvalu has only an NCF in the study, with a relatively high number of references relative to the standardized average for the study. Whereas Tuvalu's environment-related content used a range of framings (mostly sustainability), New Zealand's references only used an environment framing.

**Figure 26.**

Distribution of references to environmental issues in education sector plans and national curriculum frameworks, New Zealand and Tuvalu



New Zealand (n=9) — 100%

Tuvalu (n=18) — 22%, 22%, 56%, 22%

- Environment
- Sustainability
- Biodiversity
- Climate change
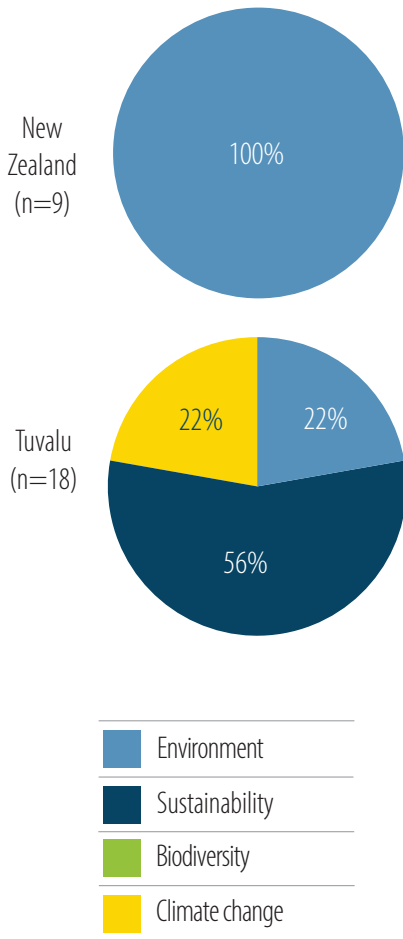
The interviewee from New Zealand discussed how the current curriculum dates from 2007 and "does require teachers to engage with the natural environment and sustainability issues through their teaching at primary and secondary levels. But it's not absolutely compulsory...So we're left in this kind of uncertain place where teachers who are very keen can absolutely do it because the curriculum shows they can, but teachers that aren't keen and don't really want to do it, don't have to." The interviewee also highlighted the Guidelines for Environmental Education in New Zealand Schools, produced in the late 1990s as a key supporting document in the inclusion of environment in education in New Zealand, as well as a more recent Environmental Education for Sustainability Strategy and Action Plan. The Enviroschools Programme was discussed as an important vehicle for environmental education in the country, with between a third to a half of all schools participating.

- **Sub-Saharan Africa**

Documents of both types were included in the study for Namibia and Rwanda, with the latter having particularly high references compared to the standardized average (Figure 27). As can be seen below, Namibia's references were more likely to be environmental in nature, whereas Rwanda makes reference to a greater variety of framings in its documents.

The interviewee from Namibia described a new policy recently launched, which in part will establish a national task force on ESD to set up an implementation plan for the new policy. The interviewee discussed how from Grade 4 upwards, environmental education is a small component within the natural science subjects only. While officially environmental education is a cross curricular subject, it is up to the teachers to put this notion into practice.

**Figure 27.**

Distribution of references to environmental issues in education sector plans and national curriculum frameworks, Namibia and Rwanda
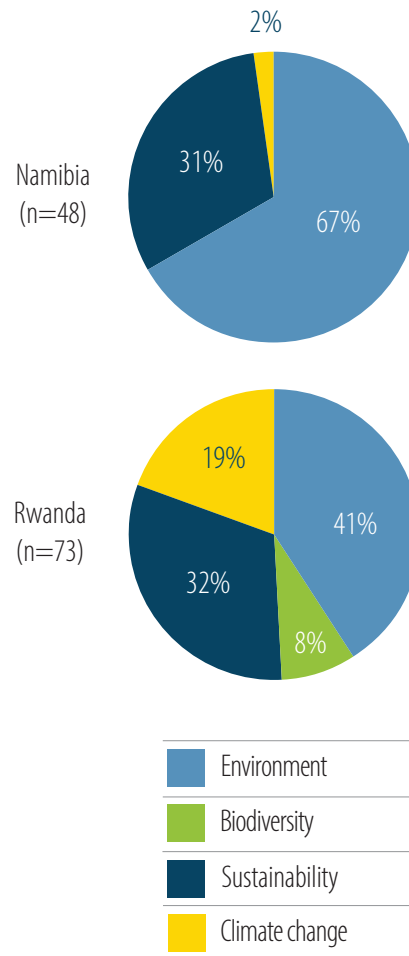


Namibia (n=48) — 2%, 31%, 67%

Rwanda (n=73) — 41%, 8%, 32%, 19%

- Environment
- Biodiversity
- Sustainability
- Climate change

# 6. Recommendations

→ **MORE EMPHASIS SHOULD BE GIVEN TO ENVIRONMENTAL THEMES IN EDUCATION, WITH A PARTICULAR NEED TO EXPAND INTEGRATION OF CLIMATE CHANGE AND BIODIVERSITY.**

As the connected climate and biodiversity crises have escalated in recent years, the findings seem to indicate that the education policy documents of many Member States have not kept pace. The lack of attention to biodiversity and climate change is problematic. This is true also with respect to curricular documents (e.g., frameworks, syllabi or textbooks), which, while concrete, are renewed infrequently. In both instances the lack of attention to these issues in current documents means that education is in danger of playing a muted role in implementing urgent mitigation and adaptation strategies in the coming years.

A wide array of environmental content should be integrated at all levels of education policy-making, including in sector and strategic planning, curriculum frameworks, and grade and subject curriculum and textbooks.

→ **ENVIRONMENTAL LEARNING SHOULD BE INTEGRATED ACROSS THE CURRICULUM, WITH A HOLISTIC PEDAGOGY THAT GOES BEYOND AN EXCLUSIVE COGNITIVE KNOWLEDGE FOCUS AND AIMS TO ENGAGE STUDENTS SOCIALLY AND EMOTIONALLY AND IN ACTION-ORIENTED LEARNING AND PARTICIPATION.**

Survey responses suggested that environment is integrated to some extent across many subjects at the lower secondary level, though still more heavily in the sciences and geography than in other subjects. Overall, the evidence suggested relatively low rates of integration across curriculum subjects (see also in Chang & Pascua, 2017; Kalali et al., 2019). Finding creative ways to include environmental issues and concerns within diverse subjects, while challenging, conveys to teachers and students alike that multiple sources of knowledge and action are needed to address ecological crises as opposed to relying only on scientific or technical solutions (Hornsey et al., 2016).

Interviewee suggestions of an imbalance in learning dimensions -- a stronger emphasis on cognitive learning and a weaker emphasis on social-emotional and action-oriented learning -- aligns with prior studies (e.g., UNESCO, 2019b, Glackin & King, 2020). Despite this,

most interviewees emphasized the crucial importance of action-focused activities in environmental learning, including through participating in action projects and other types of interactive and holistic pedagogies. Holistic curriculum and pedagogy that engages across cognitive, socio-emotional, and action dimensions is critical for developing learners that are knowledgeable, competent, hopeful, and engaged.

**Further reading:**

- *Education for Sustainable Development: A Roadmap (ESDfor2030)*
- *Education for Sustainable Development Goals: learning objectives*
- *Educational content up close: examining the learning dimensions of Education for Sustainable Development and Global Citizenship Education*

→ **EDUCATION SECTOR PLANS SHOULD INCLUDE ENVIRONMENT-RELATED THEMES TO SHOW HIGH-LEVEL PRIORITIZATION, IMPACT THE DIRECTION OF LEARNING CONTENT AS WELL AS PROMOTE WHOLE-SECTOR APPROACHES TO SUSTAINABILITY.**

Regardless of the framing used, only 25 per cent of education sector plans included a focus on environment. The lesser emphasis or absence of an environmental focus in education sector plans signals a weak prioritization of environment within the overall planning of many education systems. Its relative presence in national curriculum frameworks conveys some sense of how environment is included in detailed grade and subject curricula. While national education policy and curricular policy documents do not translate directly into school teaching and learning, they do signal high level prioritization which ultimately has implications for what gets included in textbooks and lesson plans and what is eventually taught in local schools and classrooms.

→ **ALL TEACHERS AND SCHOOL LEADERS SHOULD BE VERSED IN EDUCATION FOR SUSTAINABLE DEVELOPMENT, INCLUDING IN RELATION TO ENVIRONMENTAL EDUCATION, CLIMATE CHANGE AND BIODIVERSITY. THEY SHOULD BE PREPARED TO REALIZE THEIR EXPERTISE IN THIS AREA USING TRANSFORMATIVE LEARNING APPROACHES.**

With more than a third of survey respondents indicating no inclusion of environment-related material in teacher training programmes, there is a clear need to raise

expectations and increase support so that Member States can address this critical area in both pre- and in-service teacher preparation. Intergovernmental agencies can provide technical support, catalogue effective practices and help realize special sources of funding, in part by invoking country efforts to achieve specific SDG 4 targets, especially SDG 4.7. A review of national submissions to the UNFCCC Secretariat also found that very few countries report including climate change in their teacher education programmes, indicating that both inclusion and improved reporting in this area are needed (UNESCO, 2019a).

**Further reading:**

- *Teaching and learning transformative engagement*
- *Getting climate-ready: a guide for schools on climate action*
- *Trash Hack action learning for sustainable development: a teacher's guide*

→ **SCHOOL ENGAGEMENT WITH ENVIRONMENTAL ISSUES SHOULD GO BEYOND TEACHING AND SUPPORTING ENVIRONMENTAL ACTION IN STUDENTS, AND INVOLVE ACTION WITHIN SCHOOLS AND BY ADMINISTRATORS.**

A 'whole school' approach to environmental issues entails not only uptake in curriculum and pedagogy, but also in reducing the footprint of institutions, in showing environmental leadership with the neighbouring community, and in overall school governance (Hargis & McKenzie, 2021; Henderson & Tilbury, 2004). This includes reducing footprints of schools, as well as furthering pedagogy and activity by students that is meaningful, engaged, and supportive of action-focused environmental learning and participation.

→ **INDIGENOUS KNOWLEDGE NEEDS TO BE INCLUDED IN ENVIRONMENTAL LEARNING, WITH BROAD CONSULTATION OF INDIGENOUS GROUPS.**

Few survey participants reported that indigenous stakeholders were involved in the implementation of school based environmental activities, which raises questions about the dominant culture from which environmental knowledge is selected.

While these results may reflect missing country cases or sampling issues, this relative exclusion of indigenous knowledge in school environmental learning deserves further scrutiny. In the prior literature in relation to indigenous knowledge, inclusion was found to be insufficient, inaccurate, and inadequately connected

to the priorities of sustainability (Kim & Dionne, 2014; Whitehouse et al., 2014), with some exceptions (Meza, 2016).

→ **NATIONAL AND INTERGOVERNMENTAL ENVIRONMENTAL AND EDUCATIONAL ACTORS SHOULD BETTER COLLABORATE TO RAISE AMBITIONS AND ADVOCATE ACTION THROUGH GLOBAL BENCHMARKS, REGULATIONS, POLICIES, PROGRAMMES AND EVENTS.**

National and intergovernmental actors and processes are making a difference in addressing environmental challenges in and through education. Ministries and intergovernmental actors in education and environment fields need to continue to collaborate raise ambitions and advocate action by providing technical guidance, peer learning and consensus building on key aspects of the quality and quantity of environmental learning and training in all forms of formal, non-formal and informal education.

The role of environmental laws and intergovernmental programmes and events in advancing national-level policy change was evident through interviews and in relation to the shifting framings used in education policy and curriculum.

The interviewees placed considerable emphasis on the significant role that intergovernmental agencies and international events -- in addition to national environmental laws -- had played in creating momentum to insert a greater environmental focus in primary and secondary education systems. International and intergovernmental meetings, events and processes can inspire and catalyse country action and provide opportunities for countries to advance and achieve global benchmarks and targets in addressing environmental challenges in and through education.

Climate change and biodiversity intergovernmental processes are currently under-engaging with education systems and lifelong learning as key components of enabling an aware and motivated global citizenry needed for ambitious action by States Parties. To successfully integrate environmental themes in education throughout the world, collaboration is needed between the education and environment sectors at national, regional and global levels, with strengthened collaboration of Ministries of Education and Environment at the core.

**Further reading:**

- *Integrating action for climate empowerment into nationally determined contributions: a short guide for countries*

# Annex A - Document analysis bibliography

**Central and Southern Asia**

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# Learn for our planet

## A global review of how environmental issues are integrated in education

In light of the dramatic challenges the world is facing, there is a need to strengthen the integration of environmental issues into education in Member States.

This publication summarizes the findings of a study to examine if and how environmental and climate issues are integrated into education.

It presents a study of the integration of environmental issues in primary and secondary education policies and curricula across nearly fifty UNESCO Member States, alongside interviews with country experts, a survey of teachers, principals, and other education stakeholders and a comprehensive literature review of other studies conducted about education and the environment.

It both reviews where study countries stand on the integration of environmental issues in education, and makes recommendations on further steps to be taken in integrating environmental issues into education sector plans and curricula.

The findings of this work will inform the implementation of UNESCO's ESD for 2030 framework as well as other climate and biodiversity related processes. They will also provide a basis for developing guidelines for policy-makers at the national level.

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4 QUALITY EDUCATION

Sustainable Development Goals