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Climate change and sustainability in science and social science primary school curricula

Global Education Monitoring Report

UNESCO Global Education Monitoring Report. 2026. Climate change and sustainability in science and social science primary school curricula, Paris, UNESCO.

Published in 2026 by the United Nations Educational, Scientific and Cultural Organization (UNESCO), 7, place de Fontenoy, 75352 Paris 07 SP, France.

First edition

ISBN: 978-92-3-100800-9

https://doi.org/10.54676/DENE4573

Designed by UNESCO/Anna Mortreux

Layout by UNESCO

The Education 2030 Incheon Declaration and Framework for Action specifies that the mandate of the *Global Education Monitoring Report* is to be 'the mechanism for monitoring and reporting on SDG 4 and on education in the other SDGs' with the responsibility to 'report on the implementation of national and international strategies to help hold all relevant partners to account for their commitments as part of the overall SDG follow-up and review'. It is prepared by an independent team hosted by UNESCO.

The *Global Education Monitoring Report* team is responsible for the choice and the presentation of the facts contained in this book and for the opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization. Overall responsibility for the views and opinions expressed in the report is taken by its Director.

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The Global Education Monitoring Report is an independent annual publication. The GEM Report is funded by a group of governments, multilateral agencies and private foundations and facilitated and supported by UNESCO.

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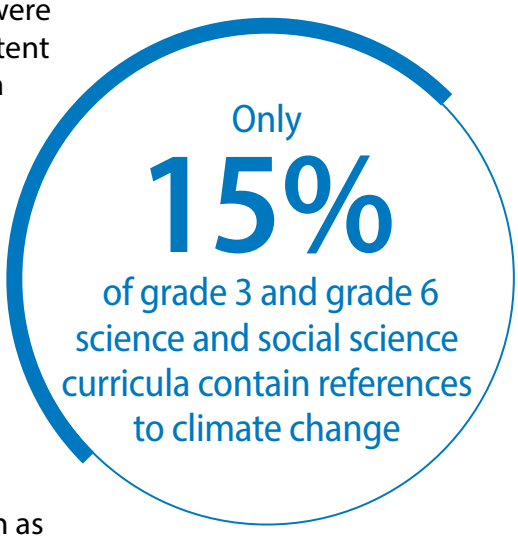
SHORT SUMMARY

Primary school curricula must include a much stronger focus on environment, sustainability and climate change.

There is an urgent need to address climate change and sustainability in primary education. Learners must understand the climate impacts in their own contexts, how these issues may affect them and their communities, and how action can be taken to contribute to more sustainable, equitable, just and climate-resilient societies. Policy and curriculum are key to ensuring climate change and sustainability are addressed in primary schools.

The findings presented in this report indicate that accelerated efforts are needed to green the curriculum. In this study of over 830 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide, it was found that 548 (66 per cent) mentioned environment, sustainability and climate change content at least once. However, the level of focus was low to moderate in 55 per cent of curricula and very low to absent in 44 percent of curricula. Grade 6 curricula were more likely to have a moderate or high focus on green content compared to Grade 3 curricula. Moreover, Grade 6 curricula had over five times more climate change content than Grade 3 curricula.



The inclusion of environment, sustainability and climate change in curricula varied across countries and in depth and focus. The majority of environment and climate change content was found in science curricula, while sustainability content appeared equally in both science and social science subjects. Europe and Northern America, Central and Southern Asia and Oceania had more green content compared to other regions. Fourteen of the 88 countries analyzed include separate subjects such as environmental education, education for sustainable development or environmental studies with a strong focus on green content. The extent of climate change content, which was minimal before 2000, has increased significantly over time, with over ten times more climate change content in curricula published from 2013-2023 compared to earliest period. The study suggests that early grades of primary education could benefit from further greening of the curriculum, especially in social science subjects, with integration addressing relevant challenges in each context.

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"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"

Climate change and sustainability in science and social science primary school curricula

Acknowledgements

UNESCO gratefully acknowledges the time and effort spent by those involved in the production of this publication.

The publication was produced under the overall guidance of Manos Antoninis, Director of the Global Education Monitoring Report.

This publication would not have been possible without those who undertook the research and report writing. Gratitude goes to the co-authors – Aaron Benavot, Professor at the University at Albany-State University of New York, United States of America and Lead, Global Indicator Development, Monitoring and Evaluating Climate Communication and Education; and Marcia McKenzie, Director of the Monitoring and Evaluating Climate Communication and Education Project and Professor at the University of Melbourne in Australia.

The authors of the publication express their appreciation for the substantial contributions to project management, data collection and analysis, and report development by Kristen Hargis, Soojeong Ahn, Aaron Redman, Shreelakshmi Subbaswamy and Nicola Chopin.

The willingness of many colleagues to assist with document collection, coding, case study summary drafting, translation and keyword validation and/or reference collation is very much appreciated. These include Agustina Kustulasari, Alex Camilo Duran Montano, Diego Calvo Bonilla, Diego Posada, Enayat Nasir, Ezgi Tunca, Fahmida Mazid, Lifen Hu, Giorgi Kobakhidze, Hajar Idrissi, Jazz Lendle Balota, Kana Takahashi, Kellie Rana, Khem Sedhai, Manos Antoninis, Ndeye Debo Seck, Nurbek Orshubekov, Polina Denisova, Sarah Ibrahimi, Sena Eksi, Simona Bezjak, Yaa Armah, Xiaoyu Niu and Yuxuan Gong.

The authors are also grateful for the time and expertise of colleagues who helped translate and/or validate translated keywords , including Abdennasser Naji, Ana Lucía Chaves Barquero, Anastassia Zabrodskaja, Anna Morawska, Anna Ruszkiewicz, Aye Nyein Minn, Batjargal Batkhuyag, Carol Benson, Darshana Samaraweera, Esteban Villalobos Araya, Flora Arellano, Francisco Ramirez, Gregor Torkar, Halla Björk Holmarsdottir, Irena Raudienė, Iveta Silova, Jeongmin Eom, Maria Lourdes Almazan Khan, Saholy Andriambololo-nivo, Sarah Ibrahimi, Simona Popa, Simonas Šabanovas, Sona Koshetsyan and Stefanie Mallow.

The authors also appreciate the able assistance in document collection or reference collation by Jumana Ibrahim, Marina López Leavy, Nisa Felicia, Rita Adjei, Xiaoyu Niu and Yaa Armah.

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List of acronyms and abbreviations

CCE	Climate change education
EE	Environmental education
ESD	Education for sustainable development
GEI	Greening Education Indicator
NCF	National Curriculum Framework
SDGs	Sustainable Development Goals
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO GEM	United Nations Educational, Scientific and Cultural Organization Global Education Monitoring Report
UNESCO-IBE	United Nations Educational, Scientific and Cultural Organization-International Bureau of Education
UNESCO UIS	United Nations Educational, Scientific and Cultural Organization Institute for Statistics

Summary of Findings and Recommendations

FINDINGS

1 While 66 per cent of science and social science primary curricula across 88 countries mention environment, sustainability, and climate change at least once, the extent of focus on these topics is low (21 per cent) or very low (10 per cent); in 34 per cent of curricula it is missing altogether . The overall extent of environment, sustainability, and climate change content is higher in grade 6 in contrast to grade 3 curricula.

2 Environment content is more than twice as prevalent as sustainability content, and more than five times as prevalent as climate change content in science and social science curricula. Climate change content is five times more prevalent in grade 6 curricula as opposed to grade 3 curricula.

3 More environment and climate change content is included in science and social science curricula than in national curriculum frameworks, although the latter include slightly more sustainability content.

4 Federated countries included over 1.5 times the amount of environment, sustainability, and climate change content than non-federated countries in grades 3 and 6 curricula.

5 Sixty-one per cent of the environment, sustainability, and climate change content is found in science and social science curricula from countries in the regions of Europe and Northern America, Central and Southern Asia, and Oceania, after accounting for number and length of curricular documents. The remaining thirty-nine per cent is found in curricula from the regions of Eastern and South-Eastern Asia, Latin America and the Caribbean, Northern Africa and Western Asia and Sub-Saharan Africa.

6 The majority of environment and climate change content is found in science curricula as compared to social science curricula. Slightly more sustainability content is included in social science curricula than in science curricula.

7 When the science and social science curricula are analyzed by publication date, two findings emerge: a) the extent of climate change content increased across all three time periods analyzed (before 2001; 2001-2012; 2013-2023), and b) there is over four times more sustainability content in curricula published from 2013-2023 as compared to earlier time periods.

RECOMMENDATIONS

8 Science and social science subjects taught in primary education can include a much stronger focus on environment, sustainability and climate change.

9 In all grade levels of primary education, climate change content can be mainstreamed. The need for such mainstreaming is especially evident in the early grades of primary education.

10 Educational systems that teach sustainability content should also ensure that climate change and environment topics, themes and issues are taught.

11 Context-specific approaches are needed to understand why and how climate change content is found more frequently in non-federated as opposed to federated countries.

12 Interdisciplinary and multidisciplinary approaches are needed when mainstreaming environment, sustainability, and climate change content in primary education.

13 To address current environmental crises, it is essential for national and subnational leadership to advocate for greater inclusion of environment, sustainability, and climate change content in subject curricula.

Introduction and Methodology

INTRODUCTION

The notions of greening education and a green curriculum have recently gained traction in international meetings. This growth in visibility was apparent during the Transforming Education Pre-Summit held at UNESCO-Paris (June 2022) and then furthered at the UN Transforming Education Summit (September 2022) held in New York. The terms have an important new organizational anchor – The Greening Education Partnership – which is overseen by UNESCO and includes four interrelated pillars: greening schools, greening teacher training and education systems' capacities, greening communities, and *greening curriculum*. The fact that the gerund form ('greening') is used rather than the adjective form ('green') conveys a sense that greening education is an unfolding process and not an existing (or end) state.

In concrete terms, the global *vision* for greening curriculum has been defined in comprehensive terms: "embracing a life-long learning approach that integrates climate action into school curricula, technical and vocational education and training (TVET), workplace skills development, teaching materials, pedagogy and assessment" (UNESCO, 2023). According to UNESCO (2023), greening curricular content should be part of a coordinated set of actions undertaken by governments and civil society organizations, which enable learners to acquire the knowledge, skills, values, and attitudes to tackle the effects of climate change and to promote sustainable development. UNESCO has delineated a concrete global target in this area: to *double* the proportion of countries (currently at 45%) that include climate change in their school curricula at all levels by 2030 (UNESCO, 2023).[1]

The current study aims to contribute to on-going efforts to advance greening curriculum. It analyzes the content of science and social science subject curricula in grades 3 and 6 from 88 countries for references to environment, sustainability, and climate change. These analyses provide comparable data on the extent to which country intentions and commitments to greening curriculum are being realized in the science and social science curricula in primary education. This study builds on a recently published analysis of grade 9 curricula across science and social science subjects (UNESCO 2024).

Another aim of the current study is to contribute to on-going efforts to track progress on Sustainable Development Goal (SDG) Targets 4.7 and 13.3. The analysis of green content in science and social science curricula at grades 3 and 6, reported herein, is being combined with data from previous studies of green content in grade 9 and in national curriculum frameworks to construct a composite index of greening curriculum, as articulated in the thematic indicator 4.7.3, which reads: "Extent to which green policy intentions are mainstreamed in curriculum documents." When taken together, these analyses of the green content of national curriculum policies and science and social science curricula at multiple grade levels provide an important benchmark for countries to consider as they ramp up efforts in greening education.

1 The specifics of this goal were further emphasized at the Subsidiary Bodies 58 side event in Bonn, Germany on June 10, 2023, by representatives of the Greening Education Partnership.

BACKGROUND

Various studies have explored the greening of curriculum mainly from the perspective of a single country case, or a small set of cases (e.g., Aikens & McKenzie, 2021; Dawson et al., 2022; Eilam et al., 2020; Greer et al., 2023; Khiri et al., 2022; McGarr & Lynch, 2021; Noguera-Méndez & Cifuentes-Faura, 2022; Salinas et al., 2022; Suárez-López & Gozalbo, 2022). These studies highlight the limited inclusion of environment, sustainability, and climate change content in the primary and secondary school curriculum. While some coverage of environment and sustainability concepts is found in both science and social sciences subjects, topics related to climate change gain scant attention outside of science subjects. This means that to the extent countries integrate science subjects only towards the end of primary education or in secondary education, student exposure to climate change content is delayed. Overall, there is limited coverage, if any, of environment, sustainability, and climate change topics in the primary curriculum, especially in the early grades.

While most studies examine national education systems in which curricular polices are relatively centralized, it is also important to consider federated education systems, where decisions about curriculum content are devolved to authorities at the sub-national or, in some cases, the local level. For example, studies reviewing progress during the Decade of Education for Sustainable Development (2005-2014) found that the mainstreaming of ESD was more likely in certain states or provinces in federated education systems and that the integration of whole school or whole institutional approaches was more likely in contexts in which school or district authorities have greater autonomy over curricular content (Henderson & Tilbury, 2004; Benavot, 2013; UNESCO, 2012; 2019).

Recent studies of the integration of green content in curriculum or policy documents in the 13 provinces of Canada, a federated system, found that only six provinces have mainstreamed green content (Aikens & McKenzie, 2021). As of yet though these studies have not investigated how the fragmentation and patchwork nature of sub-national education policy decisions play out when compared at a national level with the more common centralized system of other countries.

METHODOLOGY

A systematic analysis of grade 3 and 6 science and social science curricula in 88 countries.

Countries were selected to ensure adequate representation of all SDG regions and to include countries for which information on grade 9 subject curricula has already been analyzed (UNESCO, 2024). Eighty-eight countries are included: 83 in which the content of subject curricula is determined by national authorities and 5 with federated education systems where the content of subject curricula is set by sub-national authorities.

Up to nine grade 3 and 6 science and social science curricula were collected for each country or subnational jurisdiction (i.e., up to four science, up to four social science, and one hybrid curriculum such as environmental education or education for sustainable development). **Table 1** lists the typical subjects analyzed in each knowledge domain. In some instances, different subnational jurisdictions use the same curricula (e.g., Nunavut, Yukon Canada). Many countries have a single general science and social science subject at primary grade levels, rather than an array of specialized subjects as is more common in secondary grades.

For four countries (Indonesia, Lithuania , Switzerland, and Turkey), both descriptions of science and social science subject matters are included in one document in such a way that the subject-specific information could not be analyzed separately.2 In five countries (Cyprus, England, South Sudan, Switzerland, Wales) the curricular content is not delineated by grade level and is meant to be taught in both grades 3 and 6.[3]

In total, 834 documents from a geographically diverse group of 88 countries were analyzed for key terms related to environment, sustainability, and climate change.

2 These subjects are labeled as 'integrated' in the findings below.
3 Duplicates of these documents were created to enable analyses at both the grade 3 and 6 levels.

TABLE 1

Science, social science and EE/ESD curricula collected

Science Subjects	Social Science Subjects	Names of EE/ESD curricula
1. General Science 2. Applied Science/ Technology 3. Earth Science 4. Life Science 5. Physical Science	1. General Social Science 2. Geography 3. History 4. Civics/Citizenship 5. Economics 6. Religious, Moral, and Philosophy 7. Cultural and Art Studies 8. Indigenous Studies 9. Information and Communication Technology	▶ Environment ▶ Environment, Culture and Technology ▶ Environment and Sustainable Development Education ▶ Environmental Education and Education for Sustainable Development ▶ Environmental Education & Climate Change ▶ Environmental knowledge ▶ Environmental Studies ▶ Getting to Know the Environment ▶ Health and Environmental Education ▶ Man and Environment ▶ Sustainable Development Education ▶ Study of the Environment

Table note. The number of science subjects never exceeded four subjects in any country, so all science subjects were collected for the countries included in the sample. Any curricula related to Environmental Education (EE) or Education for Sustainable Development (ESD) were also collected. In total, 14 of 88 countries had EE/ESD specific curricula. The most curricula collected for any country was eight, as no countries had curricula for four science, four social science, and one EE-ESD subjects.

A range of sources were used to collect subject curricula, including reviewing ministry/department of education websites and searching archives of recent curriculum studies. National Commissions for UNESCO also provided curricula based on a request by the UNESCO International Bureau of Education. In cases where these methods did not yield the relevant grade 3 or 6 curricula, country experts were also consulted (see Annex A for a list of all countries included in the study).

Data analysis involved searching the subject curricula for keywords related to environment, sustainability, and climate change (these are nearly identical to the keywords used in the grade 9 analyses). Thirty-three keywords (listed in **Table 2**) were translated from English into 30 languages to enable analysis of all documents. Keyword analysis was undertaken using the qualitative management software NVivo 12 for twenty-four languages: Armenian, Bahasa Indonesian, Bulgarian, Burmese, Estonian, French, Georgian, German, Greek, Hungarian, Italian, Latvian, Lithuanian, Malagasy, Mandarin, Mongolian, Polish, Portuguese, Romanian, Sinhalese, Slovak, Spanish, Tagalog, and Turkish. Manual coding of the curricula for relevant keywords was undertaken in six languages: Arabic, Japanese, Korean, Russian, Slovenian, and Urdu.

The subject curricula documents ranged in length from 139 words to over 200,000 words. To take this variation into account, keyword frequency counts were standardized by 1,000,000 words. The resulting standardized frequency counts were then analyzed in relation to other characteristics of interest (e.g., SDG region, science/social science subject, grade level, curriculum publication date, country of origin).

The inclusion of environment, sustainability, and climate change content was also analyzed in the national curricular frameworks (NCFs)[4] in 83 of the 88 countries[5]. This analysis was undertaken to determine if and how national curricular framework emphases on these areas relate to the extent and type of inclusion in science and social science subject curricula.

4 NCFs are policy documents typically prepared by senior education officials for multiple audiences in the country, such as for use in guiding curriculum priorities, as well as for some external stakeholders outside the country. The subject specific documents analysed in the current study represent the work of curriculum specialists inside ministries of education, with possible inputs by other experts and textbook writers. These curriculum documents are mainly read by teachers in the relevant subject areas and by school leaders, students, and communities.

5 This includes 5 countries in which Education Sector Plans rather than NCFs were used. This decision corresponds with methods employed in a previous UNESCO (2021*b*) study.

TABLE 2

Environment, sustainability, and climate change keywords searched in English, organized by 'cluster.'

	English keywords			
Environment cluster	▶ environmental ▶ ecosystem*	▶ biodiversity ▶ greening	▶ green curricul* ▶ blue curricul*	
Sustainability cluster	▶ education for sustainability	▶ sustainable development	▶ ESD	
Climate change cluster	▶ climate change ▶ global warming ▶ climate crisis ▶ climate action* ▶ greenhouse gas* ▶ GHG emission* ▶ Carbon Dioxide emission* ▶ CO_2 emission*	▶ climate hazard* ▶ climate impact* ▶ climate vulnerab* ▶ renewable energy ▶ climate resilien* ▶ carbon footprint*	▶ low emission* ▶ net-zero emission* ▶ carbon neutral ▶ just transition* ▶ climate justice ▶ Adaptation (within 15 words of 'climate')	▶ Mitigation (within 15 words of 'climate') ▶ Climate change impact* ▶ net-zero CO_2 emission* ▶ net zero CO_2 emission*

Table note. Asterisks indicate all declensions were searched, meaning that depending on the role of the noun or adjective in the sentence, and the language involved, the endings of the terms can change. Searches were also conducted for the singular and plural variations of the term (e.g., climate action and climate actions).

Study Findings

FINDING #1

While 66 per cent of science and social science primary curricula across 88 countries mention environment, sustainability, and climate change at least once, the extent of focus on these topics is low (21 per cent), very low (10 per cent) or missing altogether (34 per cent). The overall extent of environment, sustainability, and climate change content is higher in grade 6 in contrast to grade 3 curricula.

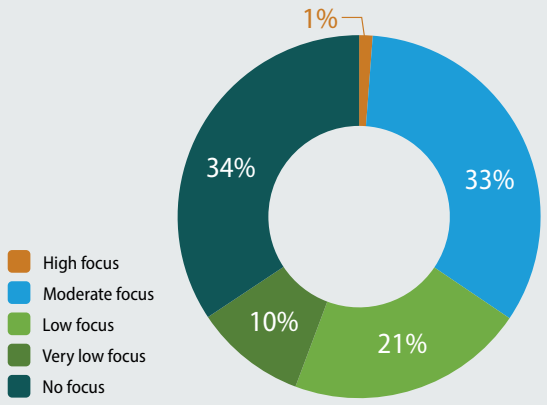
Of the 834 grade 3 and 6 science and social science curricula collected, 548 (66 per cent) mention environment, sustainability, and climate change content at least once. The level of focus was low to moderate in 55 per cent of curricula and very low to absent in 44 per cent of curricula (**Figure 1**).

The content was categorized by the extent or depth of focus as: no focus (0 out of a million words), very low focus (1-300 words per million words), low focus (301-1,000 words per million words), moderate focus (1,001-10,000 words per million words), and high focus (at least 10,001 words per million words). This categorization draws on that used in prior studies (UNESCO, 2021a; 2021b; Forthcoming).

Content categorized as having a 'high' or 'moderate' focus on environment, sustainability, and climate change is more common in grade 6 as opposed to grade 3 curricula, with a difference of 1 per cent and 8 per cent, respectively (**Figure 2**). In parallel, the percentage of subject curricula with no environment, sustainability or climate content declines from grade 3 to grade 6: from 38% to 31%.

FIGURE 1

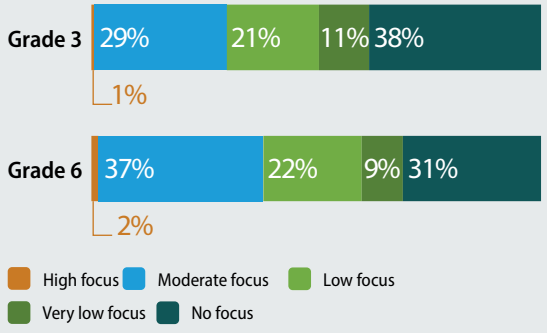
Percentage of science and social science curricula by extent of focus on environment, sustainability, and climate change content, combined.



Note: The percentages sum to 99% due to rounding.
Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 2

Percentage of science and social science curricula by extent of focus on environment, sustainability, and climate change content, by grade.



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FINDING #2

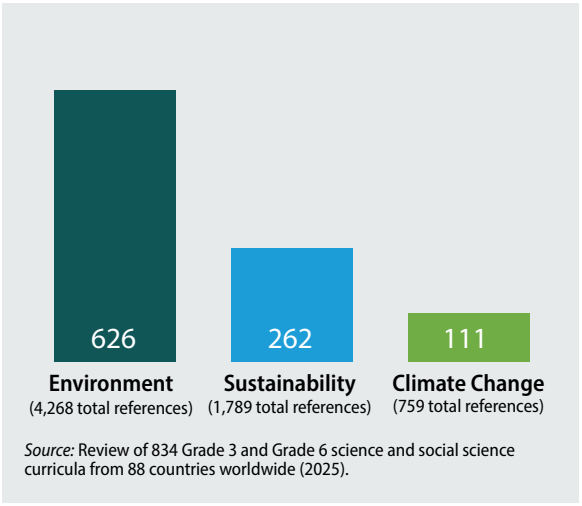
Environment content is more than twice as prevalent as sustainability content, and more than five times as prevalent as climate change content in science and social science curricula. Climate change content is five times more prevalent in grade 6 as opposed to grade 3 curricula.

Sixty-two per cent (517/834) of grade 3 and 6 science and social science curricula include environment content at least once. Sustainability and climate change are included at least once in 21 per cent (172/834) and 15 per cent (129/834) of curricula, respectively.

When references to environment, sustainability, and climate change in subject curricula are standardized, there is significantly more environment than sustainability or climate change content (**Figure 3**).

FIGURE 3

Extent of content on environment, sustainability, and climate change, combined (standardized references).



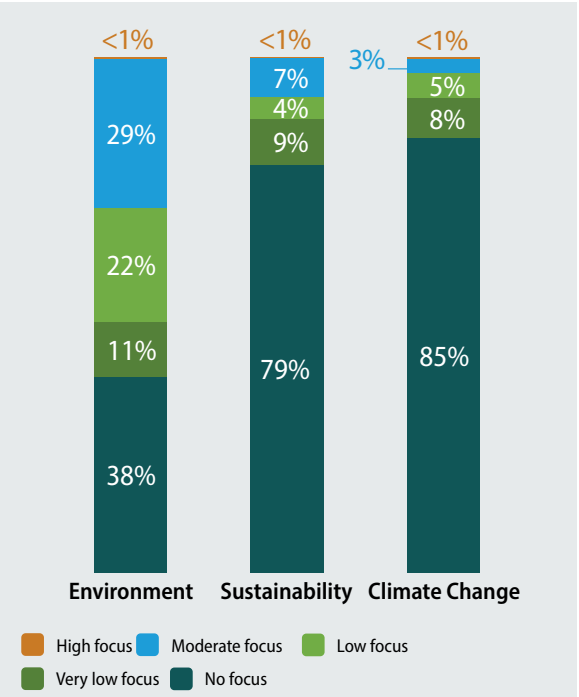
Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

The study also calculated the extent of focus on the three areas (using the scale described in finding 1). Most curricula had no or only a minimal level of inclusion, especially in relation to sustainability and climate change which is missing in about 80% of curricula (**Figure 4**).

When looking at the extent of content by grade level, similar inclusion levels were found for environment and sustainability; however, grade 6 curricula had over five times more climate change content than grade 3 curricula (**Figure 5**).

FIGURE 4

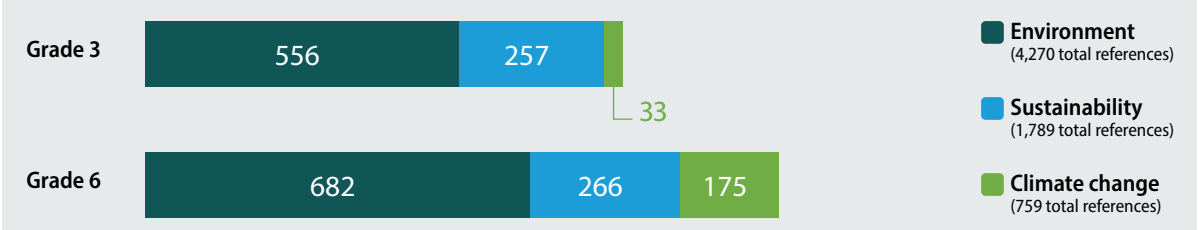
Percentage of extent of focus on environment, sustainability, and climate change combined.



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 5

Extent of content on environment, sustainability, and climate change, by grade (standardized references).



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

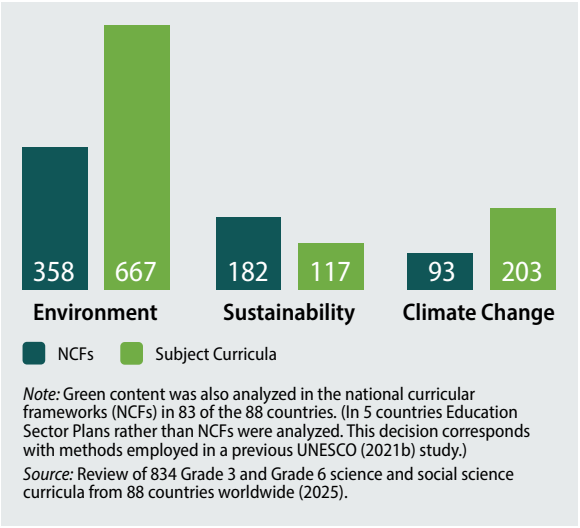
FINDING #3

Science and social science curricula include more environment and climate change content than national curricular frameworks, which include slightly more sustainability content.

Subject curricula include content on the environment and climate change to a much greater extent than the NCFs for the same countries: they include 2.2 times the references to climate change content and 1.8 times more references to environment content compared to the NCFs.[6] NCFs include 1.6 times more sustainability content than subject curricula. (**Figure 6**).

FIGURE 6

Comparison of means of NCFs and science and social science curricula (average standardized references).



Note: Green content was also analyzed in the national curricular frameworks (NCFs) in 83 of the 88 countries. (In 5 countries Education Sector Plans rather than NCFs were analyzed. This decision corresponds with methods employed in a previous UNESCO (2021b) study.)

Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FINDING #4

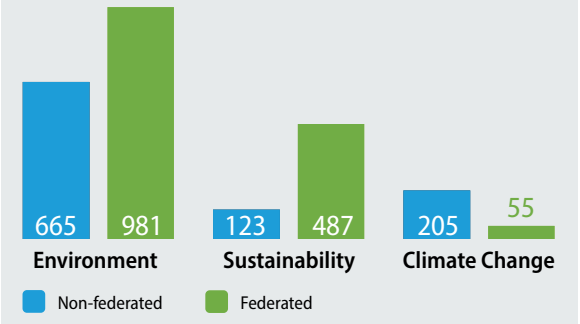
Federated countries included over 1.5 times the amount of environment, sustainability, and climate change content than non-federated countries in Grade 3/6 curricula.

In total, 5 federated, and 83 non-federated countries were included. When looking at the average references to environment, sustainability, and climate change in federated versus non-federated countries, federated countries have over 1.5 times the amount of content than non-federated countries (**Figure 7**).[7] Federated countries included more environment and sustainability content, whereas non-federated countries included significantly more climate change content.

The type of inclusion on environment, sustainability, and climate change differs slightly across federated and non-federated countries. Seven non-federated countries (Colombia, Dominican Republic, Indonesia, Ireland, Slovenia, Uruguay, and Republic of Korea) include more environment content than any federated country (**Figure 8**). Almost one third of non-federated countries (26/83) include more climate change content than any federated country. One federated country (Switzerland) includes more than twice the amount of sustainability content than any non-federated country.

FIGURE 7

Comparison of means of non-federated and federated countries for inclusion of environment, sustainability, and climate change.



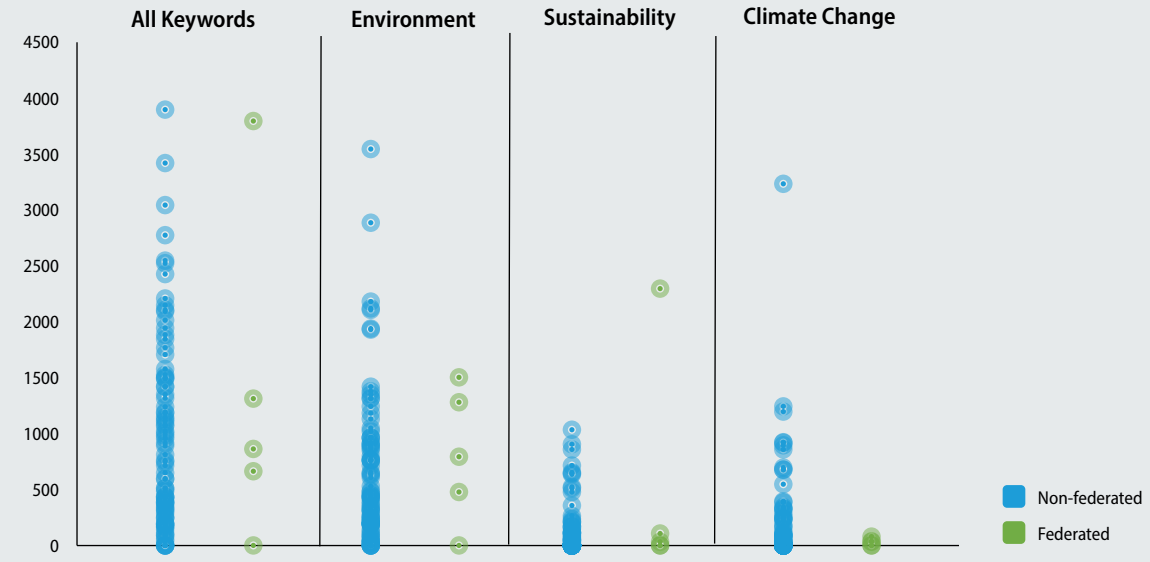
Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

6 The federated countries of Australia, Argentina, and United Kingdom also have NCFs.

7 Standardized references were calculated by summing all the references to green content for a country and dividing by the total number of words in the documents for that country and multiplying by 1,000,000. Averages were calculated using the standardized references for each of the federated and non-federated countries.

FIGURE 8.

The distribution of federated and non-federated countries in terms of their inclusion of environment, sustainability, and climate change content in subject curricula (standardized references).



Note: Each dot and circle represent the standardized references for one country.
Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

Beyond the comparison of federated and non-federated countries, it is important to gauge the extent to which some subnational jurisdictions emphasize environment, sustainability, and climate change to a greater extent than others in the same county. Here we explore this issue in five federated countries: Argentina, Australia, Canada, Switzerland and the UK.

Argentina

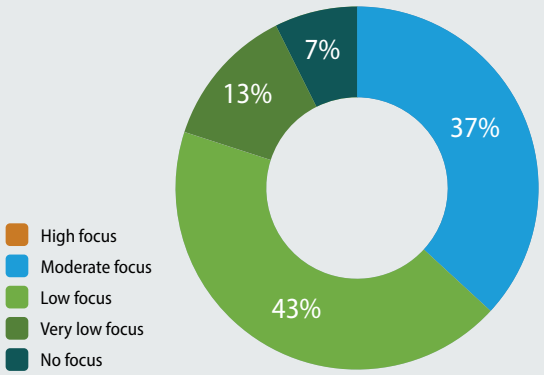
In Argentina, 7 per cent of subject curricula (7/95) across 24 provinces and the autonomous city of Buenos Aires have no content on environment, sustainability, and climate change (**Figure 9**). Of the curricula with such content, 37 per cent (35/95 curricula) have a moderate focus, 43 per cent (41/95 curricula) have a low focus, and 13 per cent (12/95 curricula) have a very low focus. No curricula have a high level of focus.

Only 15 per cent of grade 3 curricula in Argentina had no content on environment, sustainability, and climate change, with all grade 6 curricula mentioning such content at least once. (**Figure 10**). A moderate focus on these topics was more common in grade 6 (48 per cent, 23/48 curricula) than in grade 3 (26 per cent, 12/47 curricula).

All provinces include more environment than sustainability or climate change content (**Figure 11**). Thirty-eight per cent of provinces (9/24) include at least one mention of sustainability, and 33 per cent of provinces (8/24 provinces) mention climate change at least once.

FIGURE 9

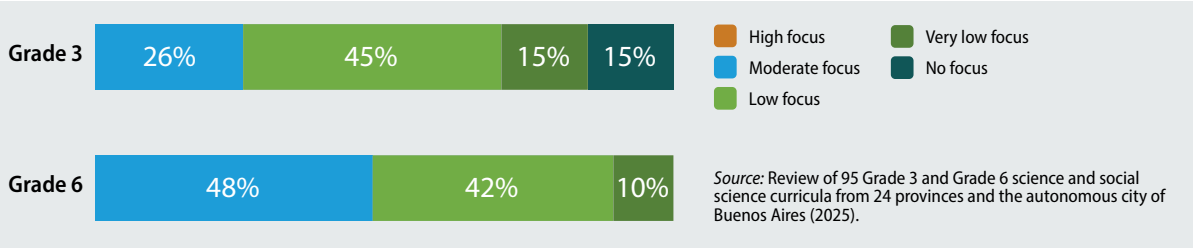
Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Argentina combined.



Source: Review of 95 Grade 3 and Grade 6 science and social science curricula from 24 provinces and the autonomous city of Buenos Aires (2025).

FIGURE 10

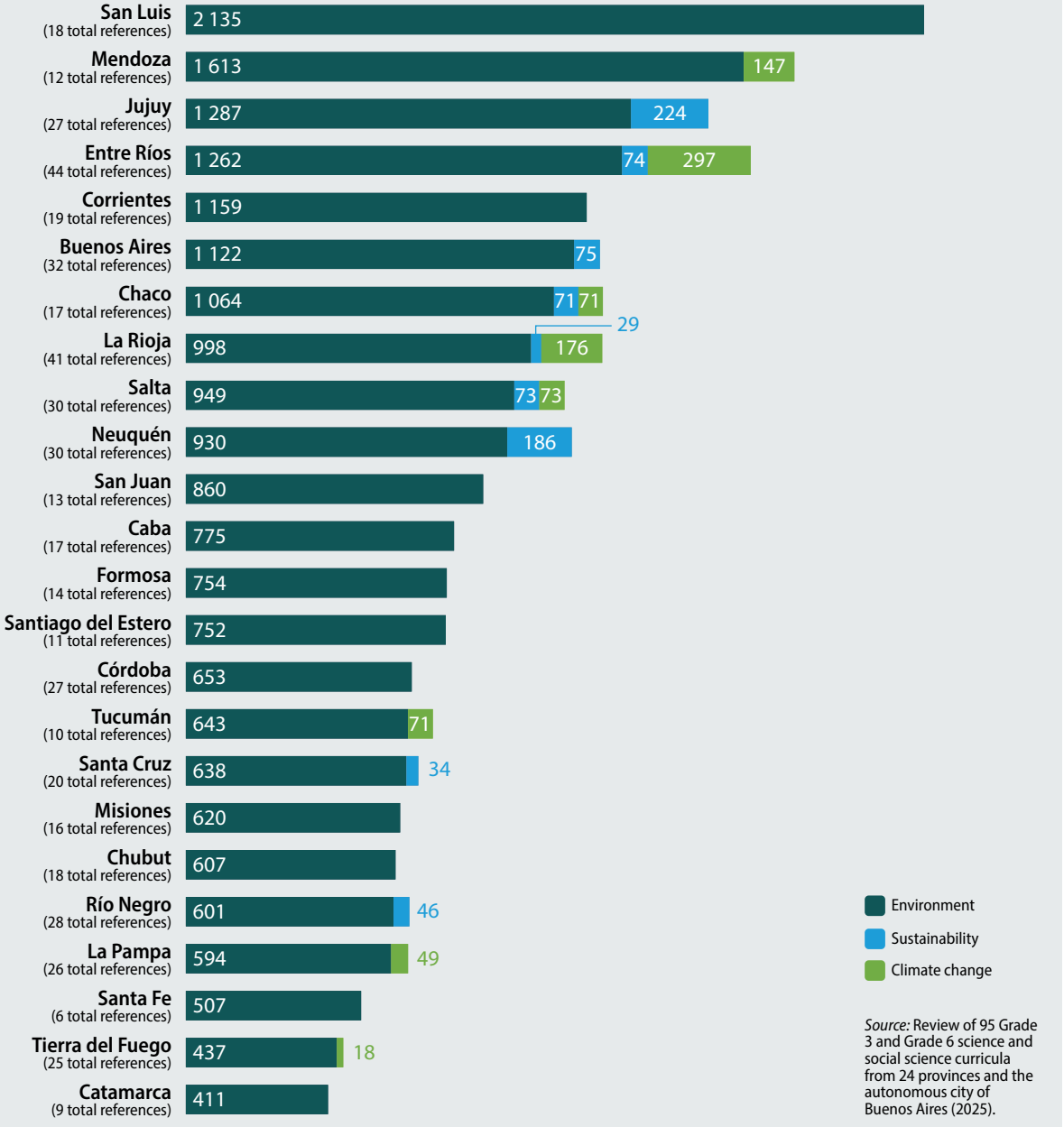
Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Argentina, by grade.



Source: Review of 95 Grade 3 and Grade 6 science and social science curricula from 24 provinces and the autonomous city of Buenos Aires (2025).

FIGURE 11.

Extent of content on environment, sustainability, and climate change across provinces for Argentina (standardized references).



Source: Review of 95 Grade 3 and Grade 6 science and social science curricula from 24 provinces and the autonomous city of Buenos Aires (2025).

Australia

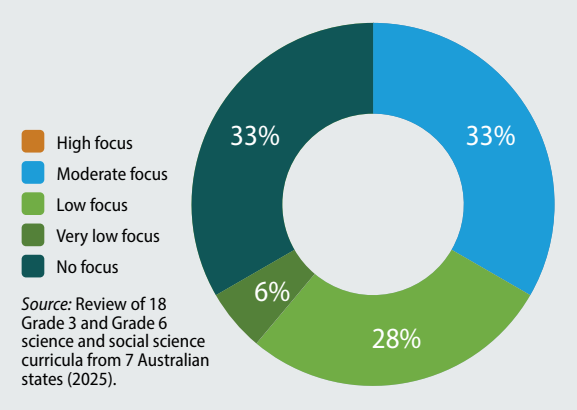
Thirty-three per cent of subject curricula (6/18) in Australia have no focus on environment, sustainability, and climate change (**Figure 12**). Six per cent of curricula (1/18) include these topics to a very low extent, 28 per cent (5/18) to a low extent, and 33 per cent (6/18) to a moderate extent. No curricula focus on these topics to a high extent.

Almost half of grade 3 curricula (44 per cent, 4/9 curricula) have no environment, sustainability, and climate change content, compared to 22 per cent of grade 6 curricula (2/9). No grade 3 or 6 curricula focus on these topics to a high extent, but a moderate extent of focus is found in 44 per cent of curricula for grade 6 (4/9) and 22 per cent of curricula for grade 3 (2/9, **Figure 13**).

All states and territories (7/7) include environment content, with the state of Victoria including significantly more content than any other state or territory (**Figure 14**). No states include sustainability[8] content, and only one state (Victoria) includes any climate change content.

FIGURE 12

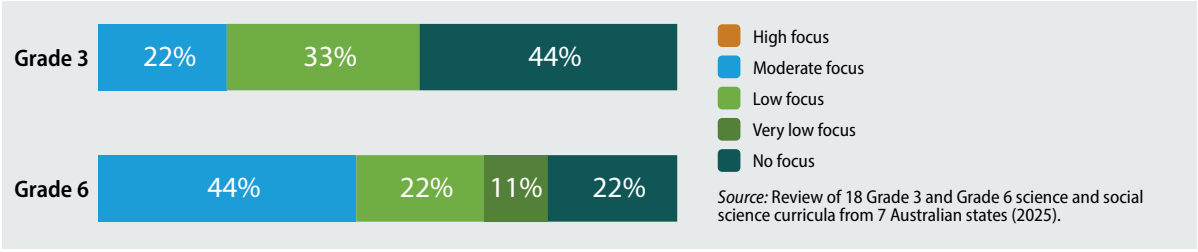
Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Australia.



Source: Review of 18 Grade 3 and Grade 6 science and social science curricula from 7 Australian states (2025).

FIGURE 13

Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Australia, by grade.



Source: Review of 18 Grade 3 and Grade 6 science and social science curricula from 7 Australian states (2025).

FIGURE 14

Extent of content on environment, sustainability, and climate change across states and territories for Australia (standardized references).

Note: The Northern Territory, Queensland, South Australia, and Tasmania use the same national curriculum.

Source: Review of 18 Grade 3 and Grade 6 science and social science curricula from 7 Australian states (2025).

8 The word "sustainability" was not included among the sustainability keywords due to the common use of this word in relation to topics not related to environmental sustainability (see Methods for a full list of searched keywords).

Canada

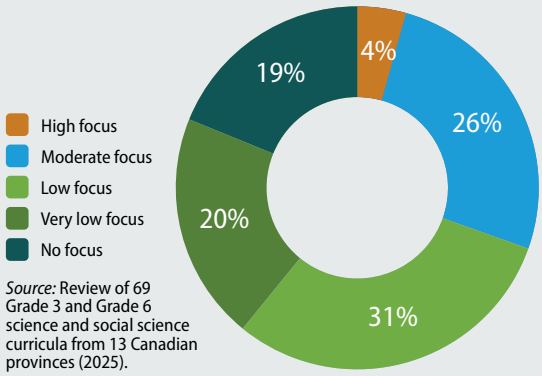
In total four per cent of subject curricula (3/69) have high engagement with environment, sustainability, and climate change content, 26 per cent (18/69 curricula) have a moderate depth of engagement, 30 per cent (21/69 curricula) have low engagement, 20 per cent (14/69 curricula) have very low engagement, and 19 per cent (13/69 curricula) have no engagement (**Figure 15**).

In total, 29 per cent of grade 3 curricula (10/35) and nine per cent of grade 6 curricula (3/35) have no environment, sustainability, and climate change content (**Figure 16**). Thirty-four per cent of curricula for grade 6 (12/35) and 26 per cent for grade 3 (9/35) have a high to moderate level of focus on these topics.

All provinces and territories in Canada (13/13) include more content on environment than sustainability, and climate change (**Figure 17**). In total, 85 per cent of provinces and territories (11/13) mention climate change at least once and 54 per cent (7/13) include sustainability content.

FIGURE 15

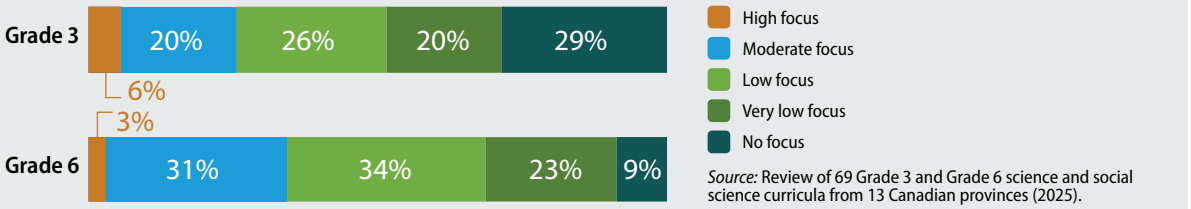
Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Canada.



Source: Review of 69 Grade 3 and Grade 6 science and social science curricula from 13 Canadian provinces (2025).

FIGURE 16

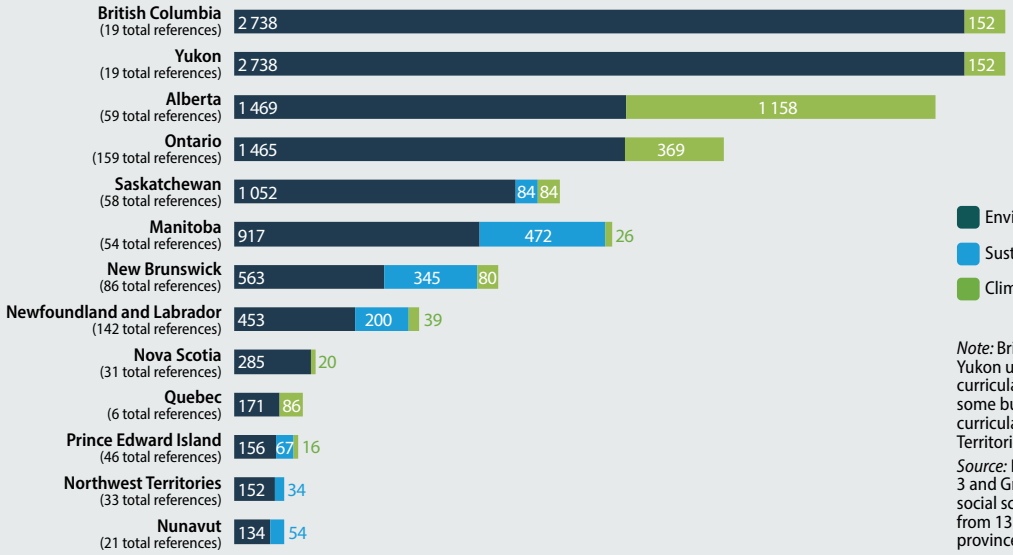
Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Canada, by grade.



Source: Review of 69 Grade 3 and Grade 6 science and social science curricula from 13 Canadian provinces (2025).

FIGURE 17

Extent of content on environment, sustainability, and climate change across provinces for Canada (standardized references).



Note: British Columbia and Yukon use the same curricula. Nunavut uses some but not all the same curricula from Northwest Territories.

Source: Review of 69 Grade 3 and Grade 6 science and social science curricula from 13 Canadian provinces (2025).

Switzerland

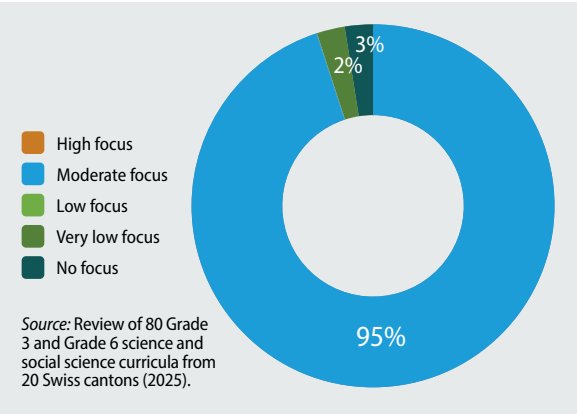
Ninety-five per cent of subject curricula (76/80) have a moderate focus on environment, sustainability, and climate change content, three per cent of curricula (2/80) have either a very low or no focus on these topics (**Figure 18**).

The overall extent of focus across grade 3 and 6 curricula also follows the distribution mentioned in the previous paragraph (**Figure 19**). Cantons in Switzerland can set their own curriculum; however, very few changes are typically made to the curricula, which may explain the similar level of focus on environment, sustainability, and climate change across grades.

Ninety-five per cent of cantons (19/20) include more sustainability than environment or climate change content (**Figure 20**). All cantons except Ticino (19/20) include at least one reference to environment and sustainability. In Ticino, only environment content is included. No cantons include any reference to climate change content.

FIGURE 18

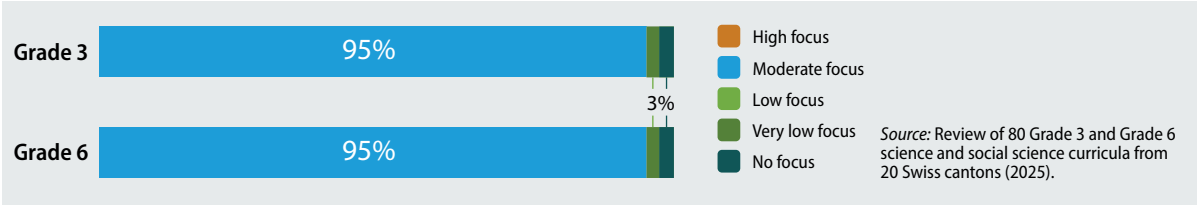
Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Switzerland.



Source: Review of 80 Grade 3 and Grade 6 science and social science curricula from 20 Swiss cantons (2025).

FIGURE 19

Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for Switzerland, by grade.



Source: Review of 80 Grade 3 and Grade 6 science and social science curricula from 20 Swiss cantons (2025).

FIGURE 20.

Extent of content on environment, sustainability, and climate change by cluster across cantons for Switzerland (standardized references).

Note: No subject curricula were found for Neuchatel, Vaud, Valais, Geneva, Jura, and Zürich.

Source: Review of 80 Grade 3 and Grade 6 science and social science curricula from 20 Swiss cantons (2025).

United Kingdom

Fifty-five per cent of subject curricula (11/20) have no focus on environment, sustainability, and climate change, 20 per cent (4/20 curricula) have a low focus, and 25 per cent (5/20 curricula) have a moderate focus (**Figure 21**).

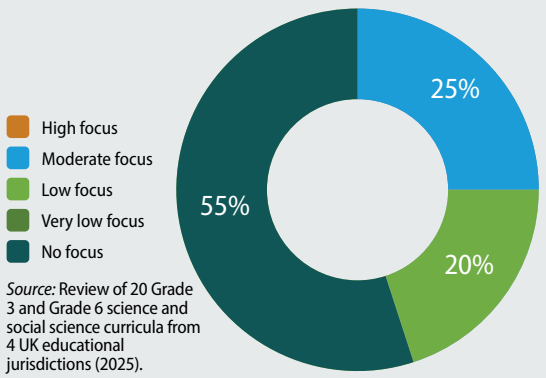
The overall extent of focus across sub-national countries is similar across grades 3 and 6, with 60 to 50 per cent of curricula (6/10; 5/10) having no focus and 20 to 30 per cent (2/10; 3/10) having a moderate focus, respectively (**Figure 22**). Twenty per cent of curricula (2/10) in both grades 3 and 6 have a low extent of focus.

All sub-national countries include environment content in their subject curricula, except Northern Ireland (**Figure 23**). No sub-national countries include sustainability, and only one country (Wales) includes climate change content.

The findings from federated countries highlight two clear patterns. First, in some countries there is significant sub-national variation in terms of the extent of green content or the emphasis on sustainability, environment and climate change (i.e., Argentina, Australia, Canada and the UK); and in others sub-national variation is limited (i.e., Switzerland). Second, federated countries do vary in terms of their overall focus on environment, sustainability and climate change. The curricula of Switzerland and Argentina have a relatively stronger focus whereas the curricula of Australia and the UK a relatively weak focus. Canada falls in between these two groups .

FIGURE 21

Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for United Kingdom.



Source: Review of 20 Grade 3 and Grade 6 science and social science curricula from 4 UK educational jurisdictions (2025).

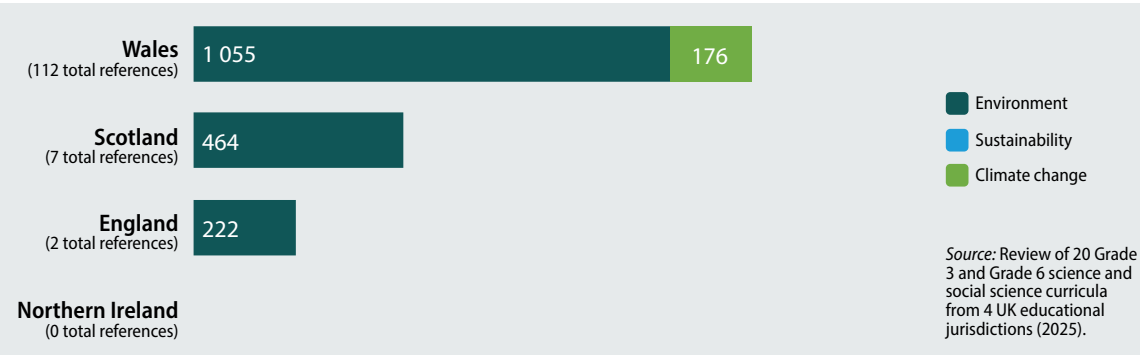
FIGURE 22

Percentage of science and social science curricula, by extent of focus on environment, sustainability, and climate change for United Kingdom, by grade.

Source: Review of 20 Grade 3 and Grade 6 science and social science curricula from 4 UK educational jurisdictions (2025).

FIGURE 23

Extent of content on environment, sustainability, and climate change by cluster across countries of the United Kingdom (standardized references).



Source: Review of 20 Grade 3 and Grade 6 science and social science curricula from 4 UK educational jurisdictions (2025).

FINDING #5

Sixty-one per cent of the environment, sustainability, and climate change content is found in science and social science curricula from countries in the regions of Europe and Northern America, Central and Southern Asia, and Oceania; compared to countries in the regions of Eastern and South-Eastern Asia, Latin America and the Caribbean, Northern Africa and Western Asia and Sub-Saharan Africa, after accounting for number and length of curricular documents.

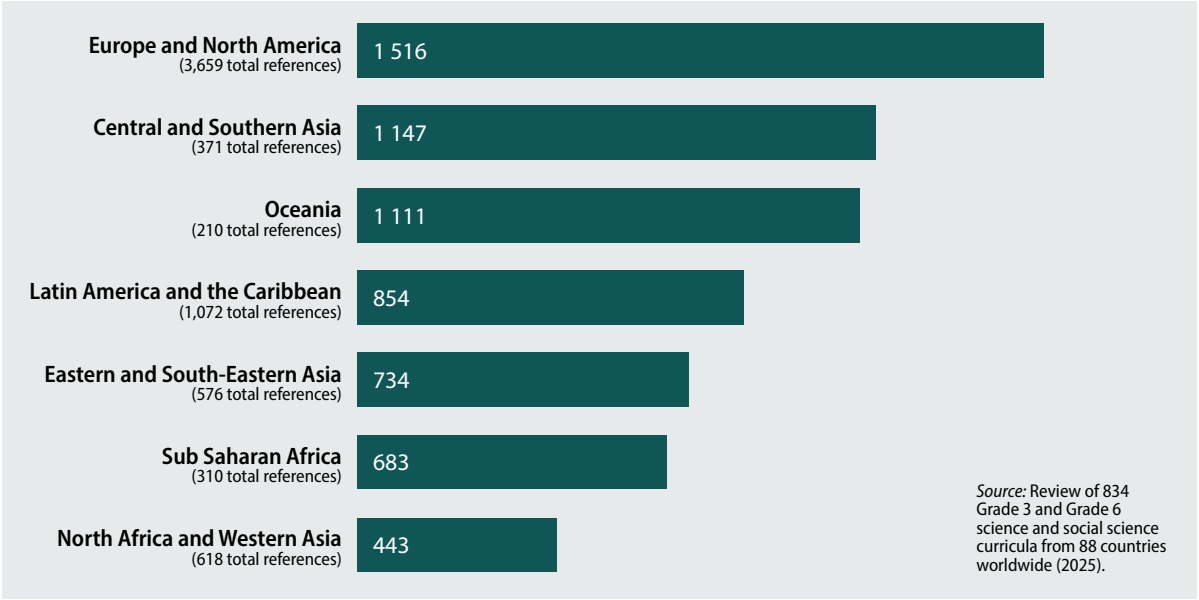
The SDG regions of Europe and Northern America, Central and Southern Asia and Oceania have more content on environment, sustainability, and climate change in their subject curricula than other SDG regions (**Figure 24**).

Across all regions, environment content is the most prevalent (**Figure 25**), with climate change being the second most prevalent in five SDG regions and sustainability in two SDG regions. The regions of Central and Southern Asia, Northern Africa and Western Asia and Sub-Saharan Africa have the most climate change content. Curricula from Europe and Northern America have considerably more sustainability content than that found in other regions and the least amount of climate change content. This suggests a higher focus in the Europe and Northern America region on sustainable development as opposed to climate change adaptation and mitigation, while regions least responsible for the climate crisis, namely Sub-Saharan Africa and Central and Southern Asia, have considerably more climate change content.

The difference in the overall amount of environment, sustainability, and climate change content between grades 3 and 6 was most pronounced in science and social science curricula from countries in the regions of Central and Southern Asia and North Africa and Western Asia, where more than three times the content occurs in grade 6 as opposed to grade 3 curricula (**Figure 26**). The differences in Oceania and Sub-Saharan Africa are also considerable: more than two times the content in grade 6 as compared to grade 3.

FIGURE 24

Extent of content on environment, sustainability, and climate change combined by region (standardized references).



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 25

Extent of content in environment, sustainability, and climate change by cluster, by region (standardized references).

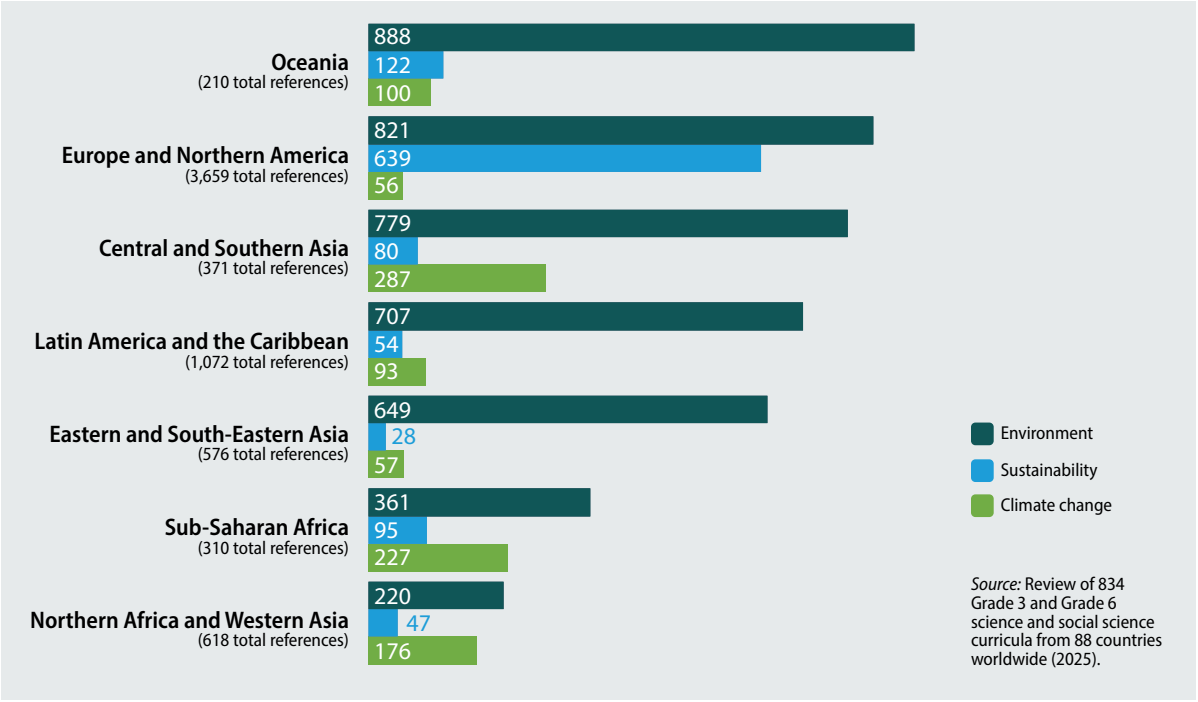
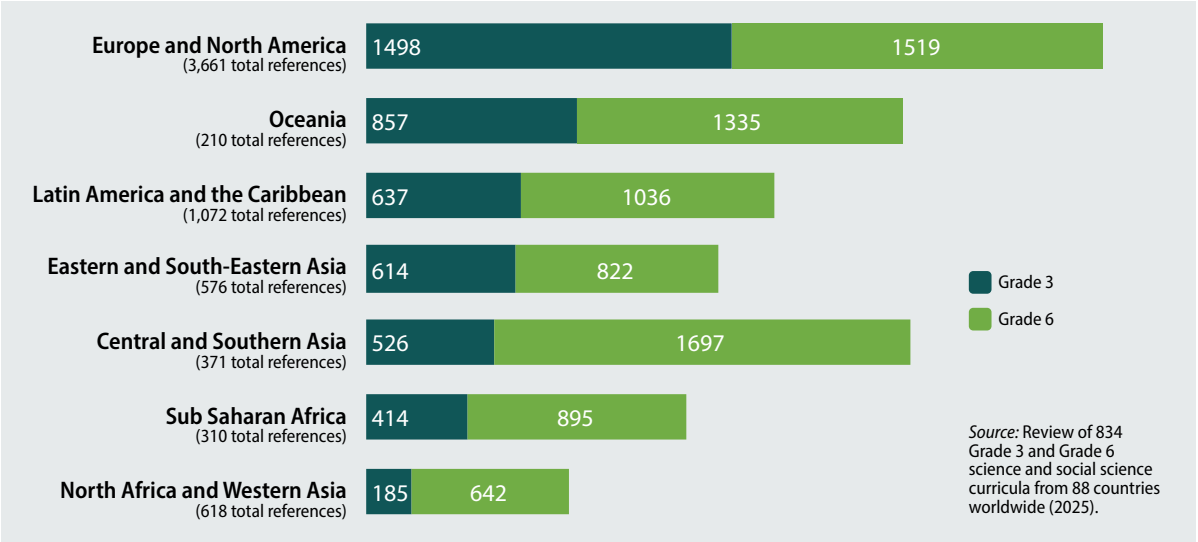


FIGURE 26

Extent of content on environment, sustainability, and climate change, by region, by grade (standardized references).



FINDING #6

The majority of environment and climate change content is found in science curricula, whereas slightly more sustainability content is included in social science curricula.

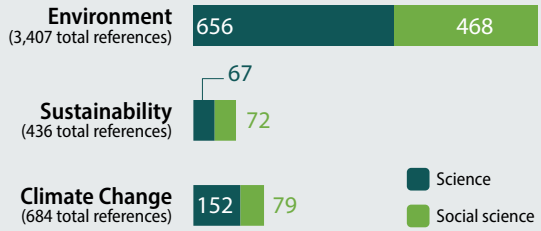
Environment, sustainability, and climate change content is included at least once in 70 per cent of science curricula (208/296) and 59 per cent of social science curricula (280/476). When looking at the type of content, most environment and climate change content is included in science curricula, whereas- sustainability content is included nearly equally in science and social science curricula (**Figure 27**).

In terms of extent of focus, 34 per cent of science curricula (102/296) have a moderate or high focus on environment, sustainability, and climate change, as opposed to social science curricula of which 28 per cent (135/476) have a moderate or high focus (**Figure 28**). Forty-one per cent of social science curricula and 30 per cent of science curricula contain no environment, sustainability, and climate change content.

When looking by grade level, the amount of environment, sustainability, and climate change extent of content in science and social science curricula almost doubles from grade 3 to grade 6 (**Figure 29**).

FIGURE 27

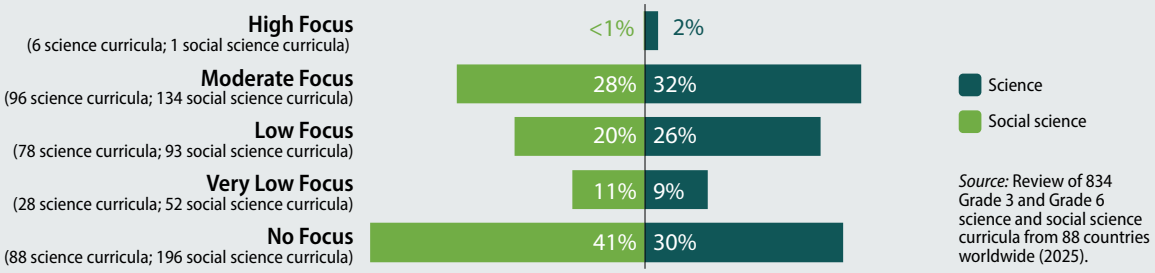
Extent of content on environment, sustainability, and climate change by subject.



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 28

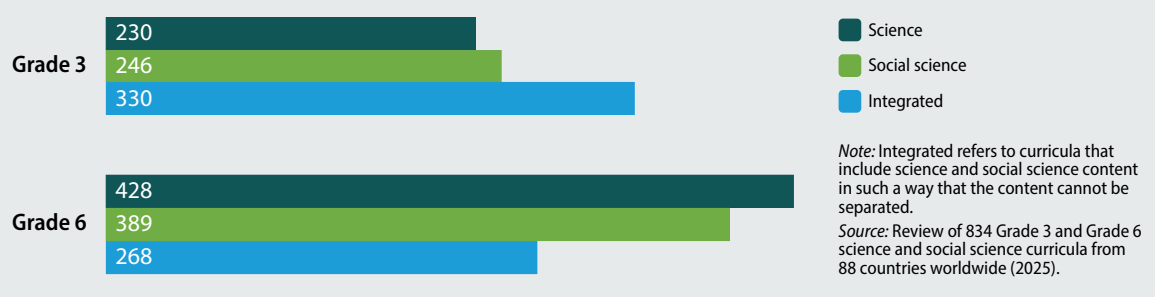
Percentage of extent of focus on environment, sustainability, and climate change by science and social science subjects.



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 29

Extent of content on environment, sustainability, and climate change by science and social science subject, by grade (standardized references)



Note: Integrated refers to curricula that include science and social science content in such a way that the content cannot be separated.

Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

The overall extent of environment, sustainability, and climate change content in 'integrated' curricula (i.e., curricula that include both science and social science material in such a way that they cannot be separated) was high, likely due to the nature of these documents. In total, 93 per cent of such curricula (39/42) have a moderate focus and 7 per cent have either a very low or no focus on these areas (3/42 curricula). The amount of such integrated content decreases from grade 3 to grade 6 (**Figure 29**).

When looking at the extent of inclusion in specific science subjects, most environment, sustainability, and climate change content is found in earth science and general science curricula; among social science subjects, geography and general social science curricula have the most content (**Figure 30**).

Within the sciences, environment, sustainability, and climate change content is found in 76 per cent of life science (71/94), 74 per cent of general science (107/145), 57 per cent of physical science (8/14), 50 per cent of earth science (5/10), and 36 per cent of applied science/technology (12/33) curricula.

Environment, sustainability, and climate change content is found in 75 per cent of information communication technology (45/60), 69 per cent of geography (33/48), 68 per cent of general social sciences (126/184), 63 per cent of economics (5/8), 51 per cent of civics/citizenship education (22/43), 50 per cent of Indigenous studies (2/4), 39 per cent of cultural and art studies (9/23), 33 per cent of religious, moral and philosophy studies (18/54), and 22 per cent of history (11/51) curricula.

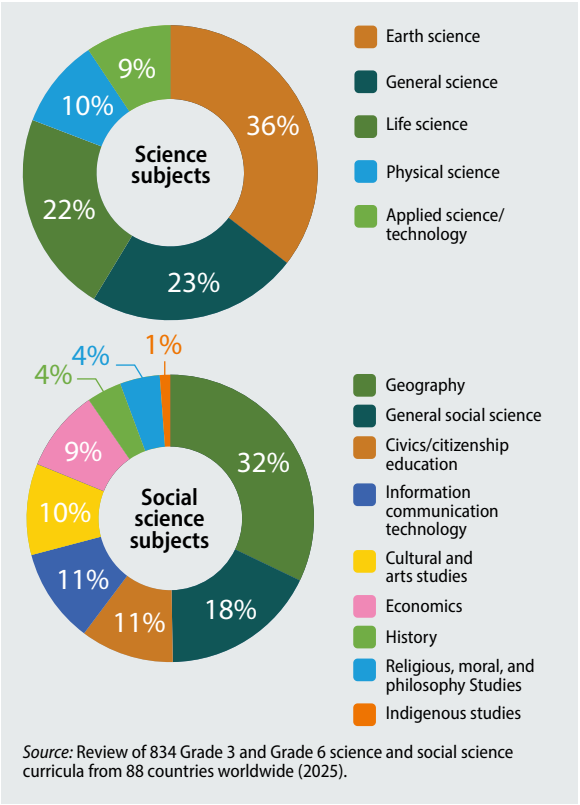
When looking at specific science subjects, environment is the most common area discussed in all subject curricula, followed by climate change except for the subject of applied science/technology where climate change is not mentioned at all (**Figure 31**).

When looking at specific social science subjects, all curricula have more environment than sustainability or climate change content. Sustainability content is second most common in 4 social science subjects (general social sciences, religious, moral, and philosophy studies, economics, and information communication technology), and climate change in 4 social science subjects (geography, civics/citizenship, cultural and art studies, and history). No climate change content was found in the social science subject curricula of information communication technology, Indigenous studies, or economics, whereas no sustainability content was found in the social science subjects of cultural and arts studies or Indigenous studies.

Over half of EE-ESD curricula had a moderate to high extent of focus on environment, sustainability, and climate change (i.e., 11/19 curricula, 58 per cent). Forty-two per cent of EE-ESD curricula (8/19 curricula) have a very low to low extent of focus on these areas.

FIGURE 30

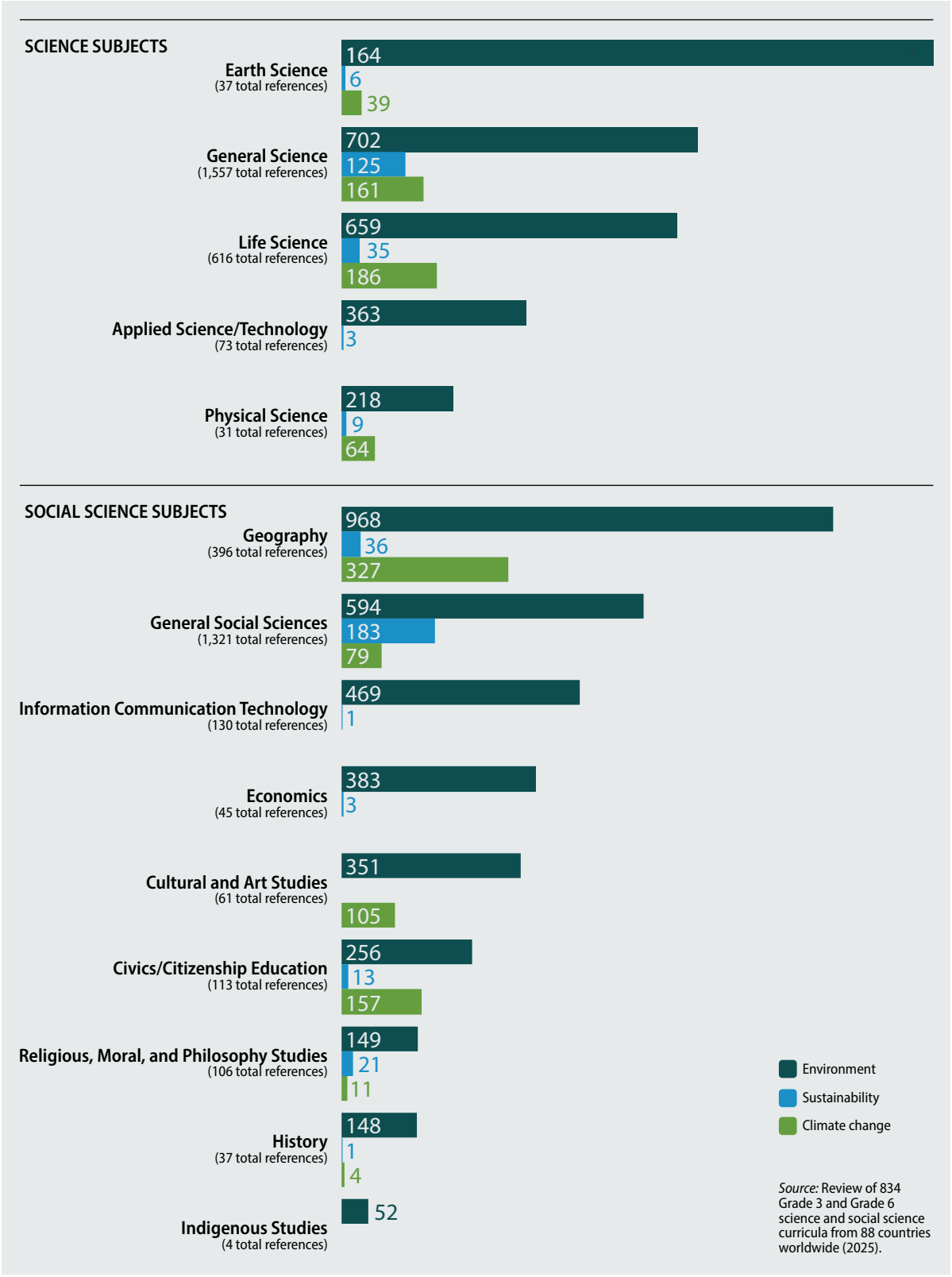
Percentage of content on environment, sustainability, and climate change, by specific science and social science subject.



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 31

Extent of content on environment, sustainability, and climate change by science and social science subject (standardized references).



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FINDING #7

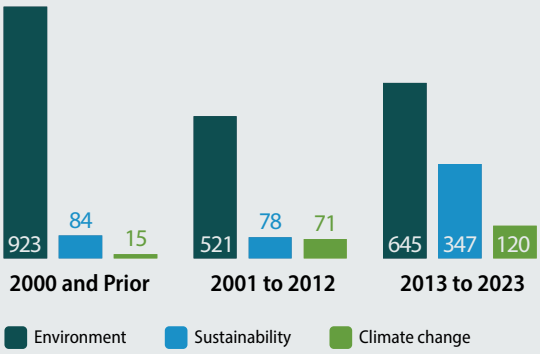
When the science and social science curricula are analyzed by publication date, two findings emerge: a) the extent of climate change content has increased across all three time periods analyzed (before 2001; 2001-2012; 2013-2023), and b) there is over four times more sustainability content in curricula published from 2013-2023 as compared to earlier time periods.

Overall, the level of environment content remains high across the three time periods analyzed (before 2001, 2001-2012, and 2013-2023[9], **Figure 32**). The level of sustainability content remained relatively constant in curricula published before 2001 and those published in 2001 to 2012, before increasing by almost five-fold in curricula published between 2013 to 2023. The amount of climate change content has increased significantly across all time periods analyzed.

The amount of environment, sustainability, and climate change content in science curricula decreased, though it is consistently higher than that found in social science curricula across all time periods analyzed (**Figure 33**).

FIGURE 32

Extent of content on environment, sustainability, or climate change, by cluster, by publication period (standardized references).



Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

FIGURE 33

Extent of content on environment, sustainability, or climate change, by subject, by publication period (standardized references).

Source: Review of 834 Grade 3 and Grade 6 science and social science curricula from 88 countries worldwide (2025).

9 Data were collected until the month of November in 2023, so they do not reflect the full calendar year.

Recommendations

Science and social science subjects taught in primary education can include a stronger focus on environment, sustainability, and climate change.

Given that the majority of grade 3 and 6 science and social science curricula have little or no content on environment, and almost no content on sustainability or climate change, there is room for significant improvement to ensure that students are prepared to become global citizens. The need to increase content in these areas is particularly important in grade 3 and in social science subjects beyond geography and general social sciences. It is encouraging, however, to see an increasing focus on climate change and sustainability subject curricula published since 2014.

Fourteen of the 88 countries analyzed in this study include a separate subject (e.g., EE or ESD or an integrated subject) in which the focus on environment, sustainability, and climate change content is consistently strong. Existing literature indicates that EE/ESD at an early age can prepare students to become environmentally responsible citizens later in life (Ardoin et al., 2017; Barthel et al., 2018; Harris, 2021). The benefits of EE/ESD include:

- Knowledge in science, mathematics, reading, writing, and more
- Emotional and social skills, such as self-esteem, character development, teamwork, and leadership skills
- Environmentally friendly behavior, such as reducing water use, increasing recycling, and participating in community cleanups
- Academic skills (21st Century skills), such as critical thinking, oral communication, analytical skills, problem solving and higher order thinking
- Motivation to learn, including enthusiasm for and interest in school
- Civic interest and engagement, such as feelings of civic responsibility and empowerment, as well as the ability to take action (NAAEE, n.d.)

In all grade levels of primary education climate change content can be mainstreamed. The need for such mainstreaming is especially evident in the early grades of primary education.

The role of primary schools in supporting climate change education, including in the early grades, cannot be understated (Dolan, 2022; Hausia Havea et al., 2019). However, in some contexts, teaching climate change is viewed as controversial (Nation & Feldman, 2022) and contested politically.

The benefits of including climate change content in primary curricula are clear. It helps ensure teachers feel justified and supported to mainstream such content in their classes (Hargis, 2023). It also increases student's agency and sense that they are prepared to act as global citizens to support climate mitigation and adaptation (Dolan, 2022). Holistic climate change education not only provides students with an understanding of climate change but also supports their development of psycho-social and action capacities (Hargis & McKenzie, 2020). At the primary level, this can include multi-disciplinary (Dolan, 2022), as well as artistic interventions, such as art installations (Sanchez Fernandez et al., 2022) and picture books (Oberman, 2023) to support students to engage with emotions they may feel, while also developing critical thinking skills. Addressing climate change in primary education only in the sciences, may be challenging to teach and may inadvertently weaken the value of climate action as well as collective efforts to mitigate the effects of climate change.

Educational systems that teach sustainability content should also ensure that climate change and environment topics, themes and issues are taught.

While it is encouraging to see such a strong focus on sustainability in European and North American countries, the relatively minimal focus on climate change in the curricula of these countries is concerning. Countries in regions most affected by and least responsible for the climate crisis were found to have more climate change content. This finding also aligns with prior UNESCO studies (UNESCO, 2021b; Forthcoming).

Context-specific approaches are needed to understand why and how climate change content is found more frequently in non-federated as opposed to federated countries.

When looking at the inclusion of climate change content in federated and non-federated countries, it is evident that context specific approaches are needed to better understand the inclusion of such content in some sub-national regions as opposed to others in the same country. The need for context-specific approaches is increasingly noted in critical policy studies of federated education policy (Beech et al., 2023; Esper & Acosta, 2023; Hartong & Urbas, 2023; Jules & Salajan, 2023; McKenzie & Aikens, 2021).

Interdisciplinary and multidisciplinary approaches are needed when mainstreaming environment, sustainability, and climate change content in primary education.

Including environment, sustainability, and climate change content in multiple school disciplines is crucial, as subject-specific placement of such content communicates value laden messages to students about how such issues are defined and how they can be addressed (Gómez Trigueros, 2020; McMillan & Vasseur, 2010; Siegner & Stapert, 2020). This study found that the majority of such content is currently included in science curricula, and much less so social science curricula, which indicates room for greater cross-disciplinary approaches to greening education.

Content related to environment, sustainability, and climate change should be integrated in all relevant science and social science subjects (also see UNESCO, Forthcoming). For instance, a focus on green content in the applied sciences, technology subjects and in agriculture would contribute to students' increased understanding of practical responses to environmental challenges. Similarly, inclusion of such topics in civics and citizenship curricula would ensure students know how to take action to change social, political, and economic systems related to environment, sustainability, and climate change issues. Likewise, inclusion of environment, sustainability, and climate change content in religious, moral, and philosophy studies curricula can help students see how such topics align with their own values, beliefs, and ideologies, an understanding which has been shown to have a greater effect on overall climate change belief and action than increased content knowledge (Hornsey et al., 2016).

National and subnational leadership, advocating for the inclusion of environment, sustainability, and climate change content in subject curricula, is essential to address current environmental crises.

Since the 1992 United Nations Framework Convention on Climate Change, leaders have expressed commitment to environment, sustainability, and climate change education. It is critical that the content explicitly included in subject curricula more adequately reflect those commitments. Apart from the importance of countries demonstrating progress in addressing their UNFCCC obligations, prior research shows that the presence of environment, sustainability, and climate change content in curricula increases the likelihood that environmentally friendly practices will occur in schools (McKenzie & Aikens, 2021). A 2020 study found that if only 16 per cent of secondary students studied climate change, almost 19 gigatons of CO2 would be cut by 2050 (Cordero et al., 2020). Beyond being an effective measure for greenhouse gas emission reductions, holistic climate change education ensures that youth are prepared with the socio-emotional, action, and cognitive capacities necessary to address the environmental crises of our times.

Annex A: Countries in the Study

Central and Southern Asia

Bhutan
India
Kazakhstan
Pakistan
Sri Lanka

Eastern and South-Eastern Asia

China
Indonesia
Japan
Mongolia
Myanmar
Philippines
Republic of Korea
Thailand

Europe and Northern America

Bulgaria
Canada
Estonia
France
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Malta
Norway
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Switzerland
United Kingdom

Latin America and the Caribbean

Argentina
Bahamas
Brazil
Chile
Colombia
Costa Rica
Cuba
Dominican Republic
Ecuador
Haiti
Mexico
Paraguay
Peru
Plurinational State of Bolivia
Uruguay

Northern Africa and Western Asia

Algeria
Armenia
Azerbaijan
Bahrain
Cyprus
Georgia
Kuwait
Morocco
Oman
Qatar
Saudi Arabia
State of Palestine
Türkiye
United Arab Emirates

Oceania

Australia
Cook Islands
Marshall Islands
New Zealand
Papua New Guinea
Samoa

Sub-Saharan Africa

Botswana
Burkina Faso
Cabo Verde
Cameroon
Chad
Côte d'Ivoire
Democratic Republic of the Congo
Ghana
Madagascar
Mauritius
Nigeria
Rwanda
Senegal
Seychelles
Sierra Leone
South Africa
South Sudan
Uganda
Zambia

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Monitoring Report

Climate change and sustainability in science and social science primary school curricula

Building on earlier studies commissioned by UNESCO, *Learn for our planet and Getting every school climate-ready*, this publication complements the publication "*Climate change and sustainability in science and social science secondary school curricula*" with a focus on Grade 3 and Grade 6 curricula. This publication summarizes the findings of new research to determine the extent to which climate change and sustainability issues are mainstreamed in primary (grade 3 and Grade 6) education around the world. Over 830 science and social science curricula covering Grade 3 and Grade 6 from 88 countries worldwide were analysed to assess the level of content on climate change, sustainability and the environment. The subject curricula for five federated countries were examined in further detail. The publication reviews where countries stand in terms of the integration of the three themes in curricula and makes recommendations on further steps that education providers and policy-makers can take to strengthen the education on offer to students.

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4 QUALITY EDUCATION

Sustainable Development Goals