

ESD in European Countries

Comparative research

Created by

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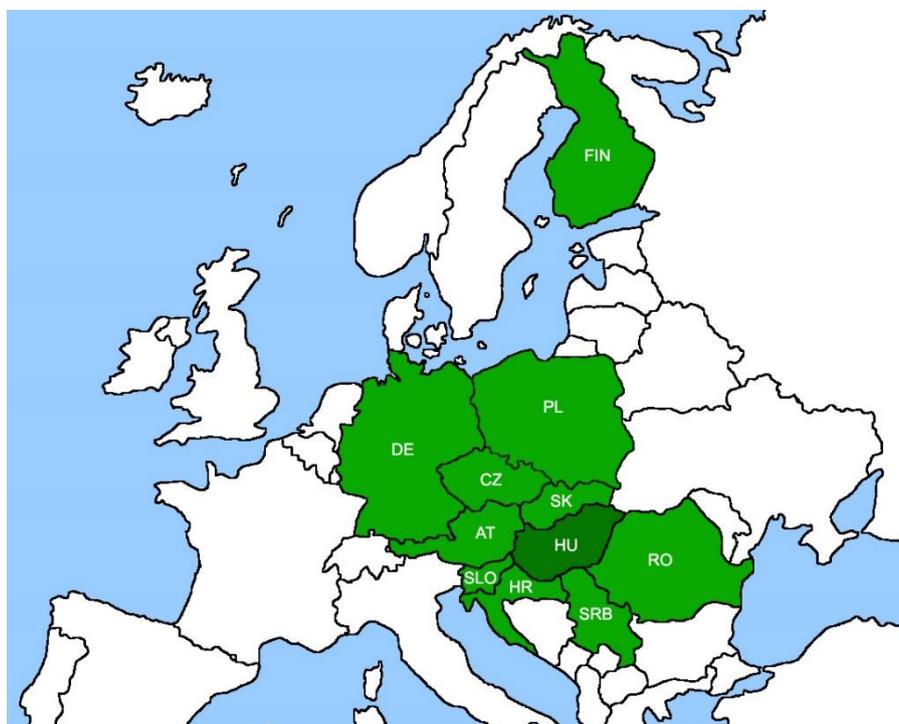
The aim of the research

In 2021, Hungarian ESD reached a new milestone: „Green Planet” Sustainability Toolkit (framework curriculum, textbook and workbook) have been published. In order to identify the novelty of the Toolkit and to collect ideas from other countries, a comparative research have been conducted on European practices in selected EU and non-EU countries, particularly in the Carpathian Basin and the V4 countries.

Methodology

The method of the research was document analysis, in which the online available national core curricula, subject descriptions and textbooks of the examined countries at ISCED-2 and ISCED-3 levels has been examined and compared to identify their sustainability and environmental-related contents (keywords: sustainability, environment, nature, ecology). The additional basis of the comparison were the monitoring reports of UNECE Steering Committee for ESD, and the databases proposed by coordination offices.

Countries examined: Austria, Czech Republic, Finland, Croatia, Poland, Hungary, Germany, Romania, Serbia, Slovakia, Slovenia.



The comparison has been based on the following aspects:

- it's a separate subject or cross-curricular topic
- it fits into the National Core Curriculum,
- its approach is complex, systemic,
- its topics are closely related to the everyday life of students,
- its focus is on environmental sustainability
- synthesizing, practice-based lessons
- exciting form and design for the students

ESD in close-by countries

Romania

In Romania education is in the hands of the Ministry of Education and Research. Primary school is called *gimnaziu*, the equivalent to secondary school is *liceu*. The subjects which are to be taught are specified by the national curricula. The institutional curricula contain two parts: a common curricula and one defined by the schools decision, this is called *Curriculumul la decizia școlii (CDS)*. The CDS contains nationally and institutionally offered possibilities as well.

The national school programs are pre-defined education plans, which are based on the best practices of developing of the curricula. These plans are strongly connected to the scientific and educational areas as well. The education plans in use are a result of consultation and negotiation with affected people (e.g. students, parent, community members). Lessons selected by the institutions can be included in the CDS for a total of 1-3 hours per week, 0-2 hours per topic group. Examining the list of mandatory curricula it is obvious that there is no subject targeting ESD.¹ Based on the school's decision a subject called „Ecology and education of environment protection” (*Educație ecologică și de protecție a mediului, clasele V-VII*)) can be chosen in the 5-7th grade.²

Studying the description of the program it makes a pleasant first impact that the subject is based on the Earth Charta's principles. The overall goal of the program is to use the main concepts and principles of environmental protection education to improve the ability to observe reality and to presume and achieve eco-conscious behaviour. In order to reach this, differing by class there are reference goals which are matched to the students age and knowledge (e.g. identifying the elements of the

1 <http://programe.ise.ro/Actuale/Programeinvigoare.aspx>

2

http://programe.ise.ro/Portals/1/Curriculum/Progr_Gim/CD/Educatie%20ecologica%20si%20de%20protectie%20a%20mediului%20prescolar_primar_gimnazial.pdf

environment, grading pollutant materials according to various aspects, being familiar with the exercises which can improve the quality of the environment, etc.) and learning activities aiming to reach them (researches, case-studies, making mini projects, collection of good exercises etc.). Looking at the table of contents the knowledge to be delivered is linked to 4 topics in every class. This results the subject having more of a natural scientific theoretical scope with less practical elements. The program also contains methodological recommendations aiming to improve the effectiveness of delivering the knowledge, these are dominated by less frontal methods e.g test, essay, interview, project, observation, self-rating) which are positive overall.

Compared to the Hungarian Green Planet Toolkit, it can be said that there are overlaps in terms of topics, but Hungarian practice affects much more complex and wider range of sustainability, and it is more advanced in system thinking and practical knowledge that can be used in everyday life and contains more favourable methods.

In contrast to high school (corresponding to the Hungarian upper secondary school), **the offer of centrally recommended programs at ISCED-3 (general secondary schools) no longer includes a similar optional program aimed at sustainability education. The knowledge connected to sustainability and environment protection comes up primarily in natural scientific classes** (eg. biology, geography).

Slovakia

In Slovakia the establishment in charge of public education is the Ministry of Education, Science, Research and Sports.³ The ISCED-2 level of education contains the second part of elementary school (5th-9th class) and the 1st-4th class in eight graded high schools.⁴ The ISCED-3 level of education takes place in the last three years of high school.

The content of education at different levels is governed by state education programs (*státny vzdelávací program*). Observing the curricula and subjects⁵ of the ISCED-2⁶ and ISCED-3⁷ it is clear that **there is no separate class targeting the education for sustainable development**. Environmental education (*environmentálna výchova*) appears as cross-curricular subject in the education programs.⁸

The cross curricular subjects (*prierezové témy*) are obligatory parts of the education which are linked to each other in the overall fields of education (in Hungary fields of literacy). Apart from environmental

3 Ministerstvo školstva, vedy, výskumu a športu SR

4 <https://www.statpedu.sk/sk/svp/statny-vzdelavaci-program/svp-druhy-stupen-zs/>

5 <https://www.statpedu.sk/sk/svp/statny-vzdelavaci-program/>

6 https://www.statpedu.sk/files/articles/dokumenty/statny-vzdelavaci-program/isced2_spu_uprava.pdf

7 https://www.statpedu.sk/files/articles/dokumenty/inovovany-statny-vzdelavaci-program/statny_vzdel_program_pre_gymnazia.pdf

8 <https://www.statpedu.sk/sk/svp/statny-vzdelavaci-program/svp-druhy-stupen-zs/prierezove-temy/environmentalna-vychova/>

education examples for such overall topics are multicultural education, regional education, traditional folk culture, project approach, teaching personal and social growth, knowledge of transport. The schools and the teachers have high liberty, these topics can emerge in various forms of education. For example educational fields (e.g. man and nature, man and society) and subjects within these fields (e.g. physics, chemistry, biology, geography, history, citizen knowledge) can appear partly, as an individual class, project or course. In order to teach the topics effectively interactive methods which engage the students are required. The educational method of the curricular subjects are chosen by the schools.⁹

According to the monitoring report of the United Nations Economic Commissions for Europe Steering Committee for ESD detailing the educational strategy regarding sustainable development the education for sustainability appears in the previously mentioned officially accredited and non-accredited forms (professional seminars, conferences) as well.¹⁰ As it is explained in the report the accredited educational programs focus on developing functional literacy, social competencies, global education and interdisciplinary competencies.

A few examples:

- improving environmental literacy in primary school and high school
- improving the teacher's social competencies through the development of their emotional intelligence
- developing business skills in primary school and high school
- the use of global education in educational processes
- the realization of teaching the project method with focusing on the cooperation of the students

The non-accredited educational forms in the following fields:

- ethical education in primary school and high school
- the aspect of human rights education in primary school
- volunteering outside of school education
- verbal and non-verbal communication in connection to the development of social contact
- teaching natural science and national history/geography according to the new state educational program
- teaching the natural and cultural specialities of south-east Asian countries

⁹ <https://www.statpedu.sk/sk/svp/statny-vzdelavaci-program/svp-druhy-stupen-zs/prierezove-temy/>

¹⁰ https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Slovakia_NIR_2018.pdf

- natural literacy in correspondence with PISA measurements
- financial knowledge, financial liberty
- innovative trends in the education of business, economy and handling money
- developing the literacy of the 21st century
- developing financial knowledge through used practices

Apart from the educational program the education for sustainability and sustainable development appears in policy and strategical level documents as well. The Strategy of Environmental Policy (2018) provides an individual chapter regarding environmental education and awareness raising. One of the main reasons behind this is to achieve a special focus on environmental and sustainability education in developing the educational program of the Educational, Scientific, Research and Sport Ministry.¹¹

To summarize the previously mentioned, it is clear that **although there is no individual class targeting ESD in Slovakia it is an important part of the national education as a cross-curricular subject and as a strategical regulation. In addition to that the pedagogical liberty offered by the local curricula is very positive, as a result the curriculum can be adjusted to the local demands, which is an important part of ESD.**

Slovenia

In Slovenia the Educational, Scientific and Sport Ministry is in charge of education. The ISCED-2 level of education is equal to the 7th-9th grade of primary school (Osnovna šola), ISCED -3 level is equal to 10th-13th grade of high school (gimnazija).¹²

According to the monitoring report of UNECE, **ESD is a cross-curricular subject** (overall topic) **appearing on almost every educational level, which is also present as an elective class** on the studied ISCED levels. Generally speaking the topics connected to sustainable development are a part of many mandatory subjects in primary school (e.g. social science, civiltian education, history, biology, physics, chemistry, geography, home economics etc.) and it is present in many of the optional subjects as well (e.g. environmental protection education, chemistry in environment, life on Earth, nutrition methods, physical and ecological projects, getting familiar with one's hometown and the protection of the environment of it, apiary, philosophy of children, media education, citizenship culture (including the national dimension), modern agriculture, modern cooking etc.)¹³

11 https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Slovakia_NIR_2018.pdf

12 https://eacea.ec.europa.eu/national-policies/eurydice/content/slovenia_en

13 https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Slovenian_NIR_2019.pdf

ESD is present in the total length of primary school (1st-9th class) in an interdisciplinary way, as a cross-curricular topic. This means that depending on the level of the class and the subject, the teachers integrate it in to some of the taught subjects and the activities inside and outside of school. Based on the above it can be stated that the elements of ESD are present in all sections of primary school, however **the most relevant to this study is environment protection education (okoljska vzgoja) class which can be chosen in the last three years of primary school (7th-9th class)**. Environment protection education is three year length optional class (35 hours yearly) where the students form a heterogeneous group consisting 7th, 8th and 9th grade students. In contrary to the natural science classes the focus of this class is not to provide basic knowledge, but to prepare students to understand the environmental phenomenas and problems, the reasons behind them and the solutions including the risks and the conflicts stemming from the use of non-renewable energy resources.¹⁴

There is an individual textbook for the course which details the 8 following topics:¹⁵

1. Water
2. Air
3. Energy
4. Soil
5. Biodiversity
6. Environment as a linked system
7. Environment protection yesterday, today, tomorrow
8. Environment and lifestyles

According to the monitoring report of the UNESCO¹⁶ similarly to primary schools' **sustainability education is present in various forms in high schools as well. On the one hand integrated to mandatory subjects, on the other hand as a part of optional environmental protection studies (študij okolja)¹⁷ and also as an elective course unit** in the topics of ecology, education of peace, family and non-violence, education of health, entrepreneurial skills. **Besides these it is present in the Environmental Education Framework Curricula (Okoljska Vzgoja)¹⁸, with instructions for implementing ESD as a cross-curricular topic.** The Framework Curricula accepted in 2008 fits well with the guidelines of the UNECE wishes to operate as a core document in bringing the ideas and knowledge

¹⁴https://www.gov.si/assets/ministrstva/MIZS/Dokumenti/Osnovna-sola/Ucni-nacrti/izbirni/1-letni/Okoljska_vzgoja_izbirni.pdf

¹⁵ http://www.zalozba-obzorja.si/dokumenti/podstr/UCBENIKI_files/Page377.htm

¹⁶ https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Slovenian_NIR_2019.pdf

¹⁷ http://eportal.mss.edus.si/msswww/programi2019/programi/media/pdf/un_gimnazija/2012/un_ip_studij_okolja.pdf

¹⁸ http://eportal.mss.edus.si/msswww/programi2019/programi/media/pdf/un_gimnazija/k_okolj_vzgoja_gimn.pdf

appearing in diverse classes on sustainability together. The document contains the key elements and approaches required for teaching sustainability: holistic and interdisciplinary approach, problem solving, complexity, proactivity, responsibility for local and wider environment, critical thinking, relying on scientific facts. Based on the curriculum high school students are required to get acquainted with and understand the basic conceptions, processes and connections influencing and sustaining the environment. They have to be able to study and manage the issues around environment protection and also to act individually and collectively in handling environmental protection related problems and to develop a sense of responsibility for future generations.¹⁹

The current curricula of the Environmental protection studies (Študij okolja) is a 140 hours optional subject which stems from 1998, which means that in Slovenia a class targeting sustainability has been available for more than 20 years now. The curricula were last updated in 2012. One of the main goals of the subject is to help students deepen and synthesize their knowledge of environmental topics and also to help develop critical thinking based on their experiences and the new information they receive. Another goal is to make the students aware of the values and incentives behind various decisions. Beside that the intention is to develop the skill in the students to be able to think about their closer and farther environment individually and responsibly.²⁰

The subject consists a total of 6 modules, half of them offer practical knowledge, the other half provides theoretical knowledge. The time frame between the two blocks is divided equally in a 50-50% ratio.

Theoretical modules:

1. A brief overview of ecological concepts
2. Environment protection problems and sustainability
3. Lifestyle, consuming habits and sustainability

Practical modules:

4. Environmental issues in close-by areas
 - 4.1. Town
 - 4.2. School
 - 4.3. Home
5. Environment protection and sustainable development in Slovenia and the world

¹⁹ https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Slovenian_NIR_2019.pdf

²⁰ http://eportal.mss.edus.si/msswww/programi2019/programi/media/pdf/un_gimnazija/2012/un_ip_studij_okolja.pdf

- 5.1. Slovenia
- 5.2. World
- 6. Solutions for environment protection problems
 - 6.1. Energy and energy sources
 - 6.2. Bioremediation
 - 6.3. Social proposals on governmental and non-governmental levels

To summarize the above it is clear, that **the Slovenian method resembles the most to the newly developed Sustainable future toolkit. At the same time, it is a big difference, that at the moment there is no school book available for the environment protection studies.** The teachers and students have a wide collection of native and international books, sources at hand.²¹

Serbia

In Serbia Ministry of Education, Science and Technological Development is in charge of education, the curricula and regulations are made by the Educational Development Institution.²² The second half of primary school (Osnovna skola – II. period), is equal to ISCED-2 level of education and high school (Gimnazija) is on the same level as ISCED-3.

In the fundamental law of the education system sustainability and responsibility for the environment comes up frequently. According to the law one of the main goals of education is to raise awareness of sustainable development, nature, protecting and preserving environmental and ecological ethics, the protection and well-being of animals and to help develop a sense of responsibility for the environment. The student also must take care of the preservation of the environment and in accordance with the rules of environmental ethics.²³

According to the monitoring report published by UNECE **the topics connected to sustainable development are present in the curricula of basic and secondary education as well. The focus currently is on introducing interdisciplinary competencies. They deal with ESD through the traditional subjects (e.g. biology, geography, chemistry), besides that there is an elective subject in high school called education for sustainable development (Образовање за одрживи развој).** In the aspect of the current study we find this subject the most relevant.

21 <http://eportal.mss.edus.si/msswww/programi2019/programi/gimnazija/gimnazija/studij-okolja.htm>

22 <https://zuov.gov.rs/o-zavodu/>

23 https://www.paragraf.rs/propisi_download/zakon_o_osnovama_sistema_obrazovanja_i_vaspitanja.pdf

In the high school curricula – according to the law- it is a goal raise consciousness of sustainable development, environmental protection and the importance of environmental ethics.²⁴ The aim of the subject targeting ESD is to help the student understand the connection between human activity and the environment, to develop an active and responsible attitude towards themselves and the environment and also to be able to see today's decisions in light of the interests of the future.

Thanks to the subject the student will be able to:

- see the consequences of human actions on the state of the environment critically
- observe the needs of modern society in the view of sustainable development
- recognize the positive and negative examples of attitudes towards the environment
- foresee the possible impact of the irresponsible human actions on the environment locally and globally
- take part in activities which contribute to improving life quality in the local environment
- reduce their negative affect on the environment

In the first and second grade the subject can be chosen weekly once (37 classes/year), in the third and fourth grade weekly twice (74-66 classes/year). **Examining the topics and contents of the subject it is clear that the common topics linked to sustainability (e.g. pollution, food produce, land use, energy production, waste management) are present. On the other hand, Hungarian Green Planet Toolkit reflects a much more complex, comprehensive approach, which is also present in the upper section of the primary school in addition to the grammar school.**

Croatia

In Croatia Scientific and Educational Ministry is in charge of education. The ISCED-2 level is equal to primary school (osnovna škola) between the 5th and 8th grade and the ISCED-3 level is equal to high school (gimnazija) between the 9th and 12 grades, which are further divided to 2-3 year long periods.²⁵

²⁴ <https://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/viewdoc?regactid=430473&doctype=reg&findpdfurl=true>

²⁵ <https://mzo.gov.hr/en>

Educational level	Cycle	Grades
Primary School	1st cycle	1-2. grades
	2nd cycle	3-5. grades
	3rd cycle	6-8. grades
High School	5th cycle	9-10. grades
	6th cycle	11-12. grades

From the school year of 2018/2019 the Ministry has begun the realization of new curricula and new teaching methods. According to our study of the curricula and the monitoring report by the UNECE Steering Committee for ESD the facilitation of educating sustainable development is a crucial part of the reform.²⁶ The ESD and **the interdisciplinary view of sustainability rising above the curricula** deeply determines the standard operation of education and is present in the national and school defined education plans as well. **Although there is no individual subject targeting ESD, it has an integrated place in the various curricula and regulatory documents.**

Sustainable development (*održivi razvoj*) as an individual unit appears in the **national curricula** (*Nacionalnim okvirnim kurikulumom*) as a **cross-curricular subject** (*međupredmetne teme*). The curricula made for these cross-curricular interdisciplinary subjects (besides sustainable development e.g. individual and collective development, health, learning how to study, etc.) have an obligatory force on all levels and forms of education. These regulatory documents describe the goals, structure, educational expectations, forms of teaching and learning and evaluations of the interdisciplinary subjects. The goals and expectations defined in the curricula are being realized with different forms and shape of education. There are some which are integrated into the national curricula of the subjects connected (in the case of sustainable development e.g. natural sciences) and there are some which are reached by the planning and realization of the institutional curricula (*kurikulum škole*).

Based on the above, sustainability is represented coherently in the national curriculum, in the curricula defined institutionally (primary school, high school), in the natural scientific field curricula and also in the curricula which define sustainable development as a cross-curricular subject. The ESD is being realized through different forms. E.g. elective subjects, classes given by the headteacher, as a part of a projects or extracurricular and out-of-school activities or connected to other interdisciplinary topics and curricula across other subjects.²⁷

26 https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/CROATIAN_NIR_2018_.pdf

27 https://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/CROATIAN_NIR_2018_.pdf

From the above-mentioned regulators, the most detailed one is the curricula belonging to the cross-curricular subject.²⁸ The subject contains all three dimensions of sustainability (environmental, social and economical) and the connection between them. It provides knowledge about the challenges of the modern world at global and local level, as well as diversity, sustainability of resources, environmental burden, human resources, personal and shared rights and responsibilities. It supports general skills such as practicality, entrepreneurial skills, innovation, critical thinking, adaptation to change and solving problems. Gaining experience through a practical way is motivating the students to act responsibly while using natural resources and energy, consuming locally produced food, handling waste reasonably, regaining used materials, active work and collaboration in the community.

The educational goals of the cross-curricular subject:

1. Gaining knowledge of the variety of nature, understanding the connections between man and environment, critical thinking, developing the skill of taking responsibility individually and collectively for the sake of sustainability.
2. Understanding the reasons and consequences of the impact on nature caused by man, which helps to improve certain parts of thinking, especially creative thinking and problem-solving.
3. Solidarity, empathy towards people and all living creatures, improving the skill of taking responsibility and the motivation to act in favour of the environment and people.
4. Taking action in school and in the community: recognizing local requirements, shaping the appropriate and innovative solutions, helping the direct contribution to the community.
5. Motivating future oriented thinking and developing a sense of responsibility towards the generation of the future, which is a condition of creating a society based on sustainable development.

The approach of the curricula is aiming to exceed the standard dimensional partitioning (environmental, societal, economical) of sustainable development, since according to the curricula it is no longer effective. Instead it suggests a different partitioning putting practical knowledge and approach in the centre. It is divided between three parts: connection (*povezanost*), effect, (*djelovanje*) welfare (*dobrobit*). This approach completes the fundamental conception of a successful way of teaching and learning sustainable development, which is applicable to the 21st century. „Connection” contains the principles of the correspondence between the ecosystem and sustainability, „effect” describes the spreading and using of knowledge and skills required for a sustainable life. „Welfare” holds the rights and responsibilities as goals to be reached connected to the well-being of future’s

generation. Therefore „connection“ answers to the question „What?“, „effect“ answers „How?“ and „welfare“ answers „Why?“. The curricula introduces knowledge contents to be integrated to subjects, targets to be reached and referenced activities through this partitioning in educational cycles.

Based on the above it is clear, that the Croatian solution is innovative and focused on competence, but at the same time they are not visioning sustainability education as an individual class, but as a part of traditional classes. Therefore, it differs from the Hungarian approach.

Austria

In Austria, education is the responsibility of the Federal Ministry of Education, Science and Research (*Bundesministerium für Bildung, Wissenschaft und Forschung*). The Austrian school system is highly specialized and diverse, especially at ISCED-3 level. The most relevant to the present research are the lower (*unterstufe*) and upper (*oberstufe*) grades of the higher school providing general education (*Allgemeinen Bildende Höhere Schule, aka AHS*). The former corresponds to ISCED-2 and the latter to ISCED-3. The lower school of the AHS contains classes from the 5th to the 8th and the upper school consists of classes from 9th to 12 grade.²⁹

Examining the current AHS curriculum, it can be stated that neither lower (grades from 5th to 8th) nor upper (grades from 9th to 12) have a separate subject for ESD.³⁰ Nevertheless, the term sustainability (*Nachhaltigkeit*) is included in several places in the curriculum of the AHS, but at the same time significantly less often than in the curriculum of most nations. Sustainability education (*Bildung für Nachhaltige Entwicklung*) is present as a training need (*Bildungsanliege*)³¹, which is essentially a cross-curricular topic present in other countries (e.g. ESD, talent management, national defense, global learning and global citizenship). Training needs go beyond the content structure of each school subject and take into account overarching topics that are important and socially relevant to students' personal development and lifestyles.³² **However, in contrast to other examined Countries, the interdisciplinary issue of ESD is not present in the curricula of individual school types, but in higher national and international regulators** (e.g. Federal Constitution, Austrian Education Strategy for Sustainable Development³³, United Nations Sustainable Development Goals³⁴). At the same time, **in the AHS curriculum, the topics related to various environmental protection and sustainability are present in**

29 https://www.bildungssystem.at/fileadmin/user_upload/PDF/Neu_mit_BMB-Logo/Ungarisch_PlakatBS_2018_web.pdf

30 <https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10008568>

31 <https://www.bmbwf.gv.at/Themen/schule/schulpraxis/ba/bine.html>

32 <https://www.bmbwf.gv.at/Themen/schule/schulpraxis/ba.html>

33 <https://www.bmbwf.gv.at/Themen/schule/schulpraxis/ba/bine.html>

34 <https://www.bmbwf.gv.at/Themen/schule/schulpraxis/ba/bine.html>

the Hungarian National Core Curriculum, which are mostly compatible with each other, with a similar importance.

Area of Man and Society Education

According to the AHS curriculum, sustainability appears first within the general educational goals in the field of *Human and Society education*, according to which the individual and society must be oriented towards ecological sustainability. In addition, it can be included in local curricula (*Schulautonome Lehrplanbestimmungen*) as an ecological focus (*ökologischer Schwerpunkt*) as a priority in grades from the 5th to the 8th and also in the 9th.

Beyond these, sustainability is almost exclusively present in subject descriptions. From the 5th to the 8th grade, which are the lower grades (grades 1-4) of the AHS, the word 'sustainability' appears only in the subject Biology and Environmental Education (*Biologie und Umweltkunde*). The subject belongs to the already mentioned field of education of Man and Society, in connection with the concepts of the relationship between man and nature, ecology, energy, and sustainability. One of the aims of the subject is for students to understand people's dependence on nature and the environment and to acquire knowledge and skills that help them to live in an environmentally conscious, sustainable way (ecological competence).

The subject is structured around the same three main subject areas in each grade:

1. Man and health
2. Animal and plants
3. Ecology and environment

The third is most relevant to the present study. The topic "Ecology and the environment" focuses on the knowledge of organisms and their interactions, the relationships between living and non-living nature, and environmental problems and defence options. It aims to provide a solid foundation for environmentally friendly action and behaviour, consisting of environmental knowledge, environmental awareness and ecological competence. It also seeks to promote personal encounters with nature as well as specific activities to make the school greener. Examining the expectations broken down by grade, it can be seen that the subject area has a fundamentally natural science focus, and the social and economic dimension of sustainability hardly plays a role in it.

Subject integration

As mentioned above, **the term "sustainability" is used only in the subject of biology in the lower secondary school of AHS** (upper secondary school in Hungary). **In other subjects, the content and knowledge belonging to the topic of sustainability are most often used with the keyword "ecology".**

For example, in the subject of Historical and Social Education / Political Education, ecological aspects may appear in the critical evaluation of scientific and technical progress and in the presentation of the ecological challenge of globalization in the twentieth and twenty-first centuries. In chemistry classes, it is present on the topic of energy and raw material savings connected to the cycles of matter in relation to economy and ecology. Physics lessons also include energy conservation and its ecological significance, while Technical Work (*Technisches Werken*) and Textiles Work (*Textiles Werken*) lessons promote ecological thinking (e.g. ecological footprint, recycling) in design and material selection to promote critical thinking and the transfer of knowledge about sustainability.

In contrast, the upper grades of AHS (grades 5-8, grades 9-12) are no longer dominated only by biology, **but also in a much more complex, multi-subject aspect of sustainability.** In line with the practices of other countries, it is most prominently included in the field of science and geography (Geography and Economics, Biology and Environmental Studies, Physics, Chemistry) in the social science (Historical and Social Education / Political Education) approach and also appears from a near-life, practical perspective (Household budget and Nutrition studies).

In the case of the subject Historical and Social Education / Political Education, the interactions of nature, technology and society, including the effects of intervention in nature, appear in connection with the field of Nature and Technology Education. In addition, a separate subject area (*Themenbereiche*) in 6th grade (10th grade) deals with sustainability, in which, by examining the political, economic, cultural and societal developments from the First World War to the present, sustainable strategies for social, ecological, political, economic and gender and cultural inequalities are developed. (For example, independence movements in response to colonialism and imperialism; North-South conflict; Development aid policy; the Austrian social and economic system in international comparison; a critical comparison of history textbook representations on the same topic.)

The subject of Geography and Economics (*Geographie und Wirtschaftskunde*) also seeks to promote concrete actions through the transfer of theoretical knowledge and contexts to encourage students to participate in responsible and active social action for sustainable development. The subject of Geography and Economics therefore seeks to contribute to sustainable development and the highest possible quality of life for all. „Sustainability and quality of life” is one of the basic concepts of the subject. According to the curriculum, the two are closely linked. The term 'sustainability', which can be interpreted in many ways, means much more than just 'stable' or 'permanent', but should instead be seen as a kind of leitmotif of ecological modernization. (In terms of the requirements of the subject, this means continuous student discourses on the balance between the human-environmental system and the pillars of sustainability (society, economy, nature)) The concept of "quality of life" in the

curriculum goes far beyond ordinary vocabulary. Like all human beings (and their descendants), it is interpreted as an opportunity for development that focuses on providing the ecological, material, and social foundations of life on an equal footing. Based on this, the guiding principles of sustainability and solidarity prove to be a necessary precondition for the highest possible quality of life for individuals and society. The curriculum embraces and prioritises UNESCO's goal of providing all people with educational opportunities through education for sustainable development (ESD) that enable them to acquire the knowledge and values and learn the behaviours and lifestyles they need to live in the future which are required for all the positive changes in societies. Other relevant basic concepts are "Growth and Crisis" (contexts of economic growth and economic crisis, possible solutions), "Human-Environment Relationships" (Anthropocene effects, description of the global challenges ahead, development of possibilities for action in the light of the concepts of sustainability) and "Geo-Ecosystems" (description and protection of the dynamic self-regulatory balance between bio- and geosystems).

The training and education task of biology and environmental studies (*Biologie und Umweltkunde*) at the upper secondary school of AHS is to deliver scientific knowledge, including in the field of ecology and sustainability. At the same time, it seeks to draw attention to the risks and dangers that scientific progress entails. The aim of biology and environmental studies is to make scientific phenomena tangible and to acquire, understand and communicate the results of biological research and to manage their boundaries. According to the curricula, lessons lead to scientific understanding based on evolution and to health-conscious, ethical and environmentally friendly behaviour. The subject promotes the ability to actively participate in social developments and discourses. The sustainability content to be acquired in Biology and Environmental Studies is related to two areas of education. For Man and Society on the one hand and Nature and Technology on the other hand. Relevant content of the former is, for example, the presentation of the impact of man on ecosystems, the relationship between the economy and sustainability (consumer awareness), the interactions between ecology, the economy, regional and trans-regional policy and social development, and the application of biological knowledge to social issues. Relevant content for students in the field of Nature and Technology is the network of living systems, the effects of human activities on the ecosystem, the protection of species, environmental education, bioethics and energy awareness.

In addition to the subjects of geography and biology, the term sustainability is also used in the fields of "People and Society" in the curricula of Chemistry (7th-8th grade) and Physics (5th-8th grade). In the case of both subjects, the connection means the cross-border, sustainable and responsible use of resources, as well as the consideration of ethical norms in the socially relevant implementation and

utilization of the acquired knowledge. In the case of physics, the development of critical thinking on social problems (e.g. climate change, energy, mobility) also appears.

Finally, sustainability is also present in the subject of Household Budgeting and Nutrition studies (Grades 5-6, Grades 9-10), which aims to review existing lifestyles and eating habits in order to ensure that students become health-conscious and environmentally conscious citizens.

In summary, in Austria, although sustainability education is emphasized in higher education regulatory documents, it appears mainly as a cross-curricular topic and mostly only in the upper grades of AHS, while less in lower grades (primary schools), mainly with a traditional science and ecological focus.

ESD in other European countries

Germany

In the Federal Republic of Germany, the matter of education is divided between the federal government and states. The scope of the former's responsibilities is defined by the Basic Law (*Grundgesetz*), and legislation in the field of education is almost exclusively the responsibility of the states (*Bundesländer*).

In terms of learning paths, the German school system is extremely specialized and diverse like the Austrian one. After the primary school stage (*Grundschule*), students can choose between Hauptschule, Realschule and Gymnasium. In the case of all three types of schools, the first two years (grades 5-6) are a so-called Orientation level (*Orientierungsstufe*), which aims the orientation between different learning pathways and types of schools. In this research we examine the lower (5-10. grades) and upper grades (11-13. grades) of the secondary school. As upper secondary education is the highest level of education (aiming for participation in higher education), unlike other types of institutions, ISCED levels are divided between sections.³⁵

Within the framework of the present research, it is not possible to examine curricula that differ from states to states. Instead, a more comprehensive picture can be obtained by examining the federal framework for sustainable development education, the 2nd edition of the Curriculum Framework for Sustainable Development, published in 2016. It is registered by the Federal Ministry of Economic Cooperation and Development and signed by all 16 federal German Ministries of Education.

35 https://eacea.ec.europa.eu/national-policies/eurydice/content/germany_en

The Framework Curriculum for Education for Sustainable Development is designed to support students in acquiring the right competencies in as many subjects as possible and to achieve sustainability in school, not only during lessons but also in school administration and management and teacher training. **With regard to ESD, Germany is pursuing a full-school approach.** The framework aims to provide a structural basis for ESD/global education for schools. It basically provides support for curriculum development, learning design, and standard setting and assessment.

Although it does not set mandatory learning objectives or contents and does not suggest chronologies or specific learning methods (these are developed in school curricula), at the primary and secondary level, it makes suggestions for the competencies to be developed, the thematic areas and content required for their development, and the standards for student performance.

For the time being, the framework focuses only on primary education and lower secondary education, for which it also proposes several subject-specific and inter-subject content and topics (optional, expandable, changeable). The aim of these are to develop students' competencies for sustainable living. Examining the proposed content areas and the areas of competence to be developed, it can be read that the framework is extremely competence-focused, aimed at educating active, globally and locally responsible, conscious citizens (like in most of examined countries).

It's most striking feature can be grasped through the parallels between education for sustainability and education for global development. Its topics are not dominated by the protection of the natural environment. Equal emphasis is placed on social and economic issues and the challenges of 21st century (e.g. poverty, armed conflicts, migration), it focuses on global processes and contexts.

Finland

In Finland, education is the responsibility of the Ministry of Education and Culture (*Opetus- ja kulttuuriministeriö*). The primary school (*Perusopetus*) has an undivided structure that starts at the age of 7 and lasts for 9 years. For ISCED-2, primary school 7-9. for ISCED-3, secondary school (*Lukiokoulutus*) 10-12. grade corresponds to.

In the last 5 years, educational reforms have taken place and are taking place at both levels of education. In 2014, new primary school curricula were published, which were introduced on 7-9. grades in three steps in 2017-2018-2019.³⁶ The new upper secondary school curriculum was published by the Finnish National Agency for Education in November 2019 and will be introduced in August

³⁶ <https://www.oph.fi/fi/koulutus-ja-tutkinnot/perusopetus>

2021.³⁷ The reforms aim, among other things, to support students' well-being and learning, to develop a wide range of competencies, to cross subject boundaries, to facilitate the transition to higher education and to build a sustainable future.³⁸

As highlighted in the national monitoring report, the new curricula at both levels are highly ESD oriented.³⁹ As in the countries studied earlier, sustainability is present as transversal competence (*laaja-alainen osaaminen*). Primary school contains 7 and high school contains 6 such areas of competence. Their task is to unify primary and secondary education, which are the common goals of the subjects. Although sustainability is present as a separate competence at both levels, the topic of sustainability is integrated into several competence areas. Finnish schools have an extremely high degree of local autonomy, as the National Core Curriculum also allows a large amount of freedom for schools to tailor their own curricula to local needs, although transversal competencies must be taken into account by all teachers in all subjects.⁴⁰

Primary school curriculum

Examining the primary school curriculum, it appears that ESD should play a significant role in the local curricula. The core curriculum emphasizes the need to take into account the changes in the life and environment of the school when reforming the education system, and to strengthen the role of the school in building a sustainable future.⁴¹ To this schools also develop a sustainable development program (*kestävän kehityksen ohjelma*) when developing local curricula. These and similar thematic plans and programs (e.g. morning and afternoon action plan, equal opportunities plan, cultural education plan, etc.) are intended to complement and implement the curriculum. In addition, the **curriculum includes the need for sustainability, more precisely a sustainable lifestyle, as a core value in education.**

In line with the above, the core curriculum states that it is **the responsibility of primary education to ensure that education here promotes inclusion and a sustainable lifestyle, as well as a democratic society.** It should also encourage students to know, respect and protect human rights and contribute to creating the conditions for equitable and sustainable development through global education, in line with the United Nations Sustainable Development Goals.

37 <https://www.oph.fi/en/statistics-and-publications/publications/core-curriculum-general-upper-secondary-schools-nutshell>

38 https://www.oph.fi/sites/default/files/documents/curriculum-for-general-upper-secondary-schools-in-a-nutshell-2020_0.pdf

39 http://www.unece.org/fileadmin/DAM/env/esd/Implementation/NIR_2018/Finland_NIR_2018.pdf

40 https://eacea.ec.europa.eu/national-policies/eurydice/content/finland_en

41 https://www.oph.fi/sites/default/files/documents/perusopetuksen_opetussuunnitelman_perusteet_2014.pdf

Sustainability is also reflected in **national goals for teaching and education**. These objectives provide the basics of the curriculum and guide local curriculum development and school work. According to this, education should promote cooperation and responsibility, health and well-being, the development of good habits and sustainable development.

Like Germany, Finland has a “whole school” approach. One of the principles of the operating culture of schools is responsibility for the environment and orientation towards a sustainable future. According to this, teachers and students in schools take into account the need for a sustainable lifestyle in all their activities.

In their daily decisions and actions, they behave responsibly towards the environment, choosing sustainable solutions instead of harmful and wasteful practices. Students are involved in the design and implementation of a sustainable daily life. **The learning community, as the creator of the knowledge base of an eco-social society,** builds hope for a better future.

In the 7-9. grades students continue to build on the sustainable lifestyle and well-being they have previously learned and discuss the social, societal, and ecological conditions for sustainable development.

Through education, students gain knowledge through theory, practice and examples of how the different dimensions of sustainable development relate to each other and what a sustainable lifestyle means in practice. The core curriculum identifies a total of 7 comprehensive areas of competence.

Examining the description of the subjects, it can be seen that the subject integration of sustainability shows similarities with several countries (e.g. Austria, Hungary). Sustainability is most strongly present in traditional science subjects, ie biology, geography, physics and chemistry.

These are the subjects whose main responsibilities include education for sustainability. In addition, it is also present in the subjects of health studies, religion, ethics, social studies, music, arts, crafts, and household.

Secondary school curricula

Examining the new core curriculum, it is clear that, like primary school, the promotion of a sustainable lifestyle is emphasized in the curricula of secondary schools.⁴² Its core values (*Arvoperusta*) include building a knowledge base for an economy that promotes the environment and the well-being of its citizens, as well as responsible action and international cooperation and global citizenship, in line with

42 https://www.oph.fi/sites/default/files/documents/lops_nuoret_verkko_docs.docx

the UN Sustainable Development Goals. Secondary education must provide an operating culture that creates a positive attitude, encourages learning and promotes a sustainable future.

Sustainability has also been included in transversal competencies. In terms of subject integration, like primary school, sustainability is manifested in a variety of subjects. It is also present in traditional natural sciences (biology, geography, physics, chemistry), social sciences (philosophy, psychology, history, social sciences, religion, ethics, health education) and other subjects like sport or visual arts.

Mostly of these in science subjects, including biology and geography. Central to biology is the construction of a sustainable future, the transmission of sustainable living and active citizenship, while geography examines the phenomena and interactions of nature, man and society. In addition, ESD is the task of the social sciences, of which sustainability is most significant in the social sciences and ethics.

Based on the above, it can be stated that in Finland, both in primary school and secondary school **ESD is integrated in a very complex way. From the operating culture, through local curricula, thematic programs, and transversal competencies, to the content of specific subjects and explicit and implicit (hidden) curriculum.**

Another important feature is that the Sustainable Development Goals are strongly present in the core curricula of both school levels compared to the other examined countries, and eco-social society and civilization as a goal to be achieved have not been formulated anywhere else.

Poland

In Poland, the Ministry of National Education (*Ministra Edukacji Narodowej*) is responsible for education. From the 2020-21 school year, changes will take place in the structure of education. The subject of the present research is primary school (*szkoła podstawowa*) 4-8. grade and the secondary school (*liceum ogólnokształcące*) providing general education 9-12. grade. While the former corresponds to ISCED 2, the latter to ISCED 3. Examining the list of subjects in primary and secondary school curricula, it can be stated that **there is no separate subject for sustainability education in Poland at any level of education.**

ESD in primary school

ESD in primary school is mainly in the 4th grade nature studies, then in 5-8. grade within the subjects of biology and geography. Contrary to most of the countries studied, it is not a cross-curricular topic, but the aims of primary education include developing an approach that respects the natural

environment, disseminating knowledge of the principles of sustainable development, encouraging action on the environment and developing interest in ecology.⁴³

Although the term sustainability (*zrównoważony*) is not included in the description of the subject of nature studies, students base their knowledge on the protection of nature here. As confirmed by the UNECE ESD monitoring report, in the classes students develop their knowledge, skills and attitudes related to nature conservation: among other things, they get to know the forms, organizations, and areas of nature conservation of Poland, prepare for measures to protect the environment, man and nature, observe and identify places in their immediate environment that have been positively or negatively affected by human activity.⁴⁴

Sustainability itself is already literally appearing in geography and biology. And although both subjects are more focused on science, in case of geography, in addition to the natural dimension, students learn about the economic and social context of sustainability, the relationship between man and the natural environment, and the concept of sustainable development. Within the framework of the subject, students will get acquainted with renewable and non-renewable energies and the related problems, the causes and consequences of natural and man-made disturbances in the ecological balance, and climate change, and the possibilities of solving their environmental responsibilities. At the same time, the subject of biology also presents the sustainable use of renewable and non-renewable resources, and the subject approaches environmental sustainability in terms of biodiversity and basic biological processes. (e.g., living conditions of living organisms and necessary environmental factors, intra- and inter-species competition, symbiosis, living and non-living elements of the ecosystem).

ESD in secondary school

Although ESD, like primary school, is mainly present in geography and biology classes, it is already much more prominent in secondary school, where students learn the human-environment-society relationship system not only locally but also globally. For example, they learn about sustainable practices in environmental and land management, practices to improve the quality of human life, and develop a sense of responsibility for their immediate and remote environment. In this context, the subject promotes an understanding of the need for rational farming practices and a sense of responsibility for local, regional, national and international natural and cultural values, as well as social solidarity, respect and empathy for other nations and ethnic groups, in line with patriotic, community and civic attitudes.

43 <https://www.dziennikustaw.gov.pl/DU/2017/356>

44 <https://www.unece.org/fileadmin/DAM/env/esd/10thMeetSC/Documents/Poland.pdf>

Biology education emphasizes the importance of the rational management of natural resources, the adaptation to environmental change, and the importance of biodiversity as an indicator of sustainable development. Biology education aims to develop students' respect and responsibility for the more-than-human world, to understand the need for sustainable use of resources, to ask analytical questions about the causes and consequences of environmental problems and threats, including the need for international cooperation to prevent environmental hazards.

In addition, high school students may encounter environmental issues in ethics classes, which also emphasize the need for sustainable development and the protection of biodiversity, examine the issue of the moral accountability of animals, formulate arguments to protect nature, and engage in environmental activities.⁴⁵

Based on the above results, it can be said that, like most of the examined countries, **Poland does not have a separate subject for ESD, which is the task of traditional natural and social science subjects.**

Czech Republic

In the Czech Republic, the Ministry of Education, Youth and Sport is responsible for education. ISCED level 2 is the upper secondary school (*Základní škola - Druhý stupeň*) 6-9. grade, ISCED 3 for high school 10-13. grade corresponds to.⁴⁶ Examining the curricula in general, it can be stated that, that **there is no separate subject for sustainability education in either primary or secondary school.**

Environmental education is present at both levels of education as a **cross-curricular topic** in several fields of education (e.g. Man and Nature, Man and Society), i.e. science (biology, chemistry, physics, geography and geology) and social sciences (basics of civil and social sciences, history, man and the world of work, health education). Based on these it can be read that **traditional topics appear in the curricula**, in the subject structures used by most examined countries.

In connection with structure, the term „sustainability” itself is literally present in the primary school curriculum only in the subjects of geography and chemistry. In secondary school also in the subjects of geography and geology. This may be due to the fact that both curricula are relatively old, dated 2007, so they use the older term, "environmental education", are less innovative and complex and have less global education than the German framework curricula. Nevertheless, it is positive that through the development of civic key competencies, the development of a civic-minded, decision-making-conscious civic in the creation of a sustainable society appears in both curricula.

45 <https://www.dziennikustaw.gov.pl/DU/2018/467>

46 https://eacea.ec.europa.eu/national-policies/eurydice/content/czech-republic_en

Compared to Green Planet curriculum, it can be stated that **the new Hungarian curriculum provides students with more up-to-date and innovative, easier-to-digest, more ordinary knowledge, both in terms of content and pedagogy.**