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# Contents

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## Introduction 4

Methodology 5

---

## Armenia 7

General framework for the development of environmental education 7

Preschool education 10

General secondary education 11

Vocational education 13

Continuing education 15

Findings 16

---

## Belarus 19

General framework for the development of environmental education 19

Preschool education 22

General secondary education 24

Vocational education 27

Continuing education 30

Findings 31

---

## Moldova 34

General framework for the development of environmental education 34

Preschool education 37

General secondary education 38

Vocational education 39

Continuing education 41

Findings 43

---

## Ukraine 45

General framework for the development of environmental education 45

Preschool education 51

General secondary education 52

Vocational education 54

Continuing education 56

Findings 58

---

General findings and recommendations 61

---

List of sources used 64

# Introduction

Solving the acute environmental problems faced by modern humanity is impossible without the formation of an ecological worldview, values, attitudes and ecological lifestyle among the entire population of the planet. According [to a study](#) conducted with the participation of Oxford University specialists as part of the Peoples' Climate Vote, more than 60% of people in the world believe that environmental problems pose a serious threat to humanity and the situation with the environment and climate is extraordinary. Therefore, the development of environmental education and upbringing is a task of paramount importance for the world community, and the region of Eastern Europe and the Caucasus is no exception.

Back in 2021, [according to experts from the Economic Commission for Europe](#), in all countries of the region there were difficulties in disseminating environmental information and developing environmental education. The processes of modernizing legislation and introducing recognized world practices proceeded unevenly and were hampered as a result of internal political difficulties and the consequences of the COVID-19 pandemic. In all countries of the region, there were obstacles to the development of environmental education and information related to the lack of awareness of officials about their obligations in accordance with international and national environmental legislation, the lack of a unified database of environmental information, the lack of political will to control the activities of organizations that have a significant impact on environment.

It is currently impossible to assess the full scale of the humanitarian and environmental consequences of the Russian war on the territory of Ukraine and the prospects for the development of the countries of the region in this context, so the applicability of the results of this study may be limited. However, an analysis of the conditions for the development of environmental education, emerging barriers, as well as best practices will allow us to continue working to overcome the environmental challenges that the population of the region is currently facing and will face in the future.

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## Methodology

**This study is devoted to environmental education in Armenia, Belarus, Moldova and Ukraine and solves the following tasks:**

- study the general framework for the development of environmental education, including international obligations, national legislation and the attitude of the population to environmental problems;
- describe the state of environmental education in preschool institutions;
- describe the state of environmental education in institutions of general secondary education;
- describe the state of environmental education in vocational education institutions, including the levels of vocational, secondary specialized and higher education;
- assess the state of additional environmental education both in the format of retraining and advanced training courses, and in the format of non-formal education for various professional groups and the general public.

**The following key concepts are used in the report:**

**Environmental education** is a process of education, upbringing, development of the individual and the population, self-education and accumulation of experience, aimed at the formation of value orientations, behavioral norms and special knowledge on environmental protection, nature management and ensuring environmental safety and implemented in environmentally competent activities.

In this report, the concept of environmental education includes formal (at the preschool, school and professional level) education on environmental topics (both specialized and teaching of environmental topics and issues within other programs and courses), out-of-school education on environmental topics in preschool and school institutions, as well as additional education in the format of advanced training (both environmental specialists and professionals in other specialties) and in the format of non-formal education for children and adults. Thematically, environmental education is understood as including the subjects of natural history, environmental nature, but with an emphasis primarily on environmental protection and sustainable development.

**Education for Sustainable Development** is an approach to education that promotes the acquisition of knowledge and skills by students of all ages, the formation

of values and attitudes to solve the interconnected global problems that the world faces, including climate change, massive loss of biodiversity, poverty, social injustice and other barriers to sustainable development.

**Formal education** is a program or course, upon completion of which a person has a certain set of statutory rights. In particular, the right to engage in paid professional activities in the profile of the completed course, to occupy a higher position, to enter educational institutions of a higher rank. The basis for their provision is a diploma or other state-recognized certificate.

**Informal education** is any organized and continuous educational process that is carried out outside the system of traditional (formal) education. The fundamental principles of non-formal education are accessibility and voluntariness. To date, virtually all learning, or rather all experience gained that does not directly lead to a diploma, can be considered non-formal education. Its target audience can be anyone: children or adults, people with incomplete secondary education or with an advanced degree.

**Further education** or Continuing education is a type of education that is aimed at comprehensively meeting the educational needs of a person in intellectual, spiritual, moral, physical and (or) professional improvement and is not accompanied by an increase in the level of education. Type of formal or non-formal education.

**The following data collection methods were used in the study:**

- description of international and national legislation;
- analysis of secondary data - the results of previous studies and reviews on the topic of environmental education;
- expert interviews and consultations (12 experts from Armenia, Belarus, Moldova and Ukraine).

# Armenia

## General framework for the development of environmental education

The conditions for the development of environmental education in Armenia determine the country's international obligations, which include participation in international conventions on environmental issues and harmonization of environmental legislation with the EU, as well as national legislation, which is undergoing changes, including in connection with the constitutional reform after 2015.

Among the international conventions ratified by Armenia and involving the development of environmental education are the Convention on Climate Change (ratified in 1993), the Convention on Biodiversity (ratified in 1993), the Convention to Combat Desertification (ratified in 1997), but the most attention is paid to the issues of environmental education and enlightenment in the Aarhus Convention - [the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters](#), ratified in Armenia in 2001. Armenia has a network of 15 Aarhus Centers dealing with environmental issues throughout the country. The first center was established in Yerevan in 2002. In the period from 2005 to 2010, centers opened in the cities of Dilijan, Gavar, Goris, Gyumri, Hrazdan, Kapan, Vanadzor, Alaverdi, Aparan, Ijevan, Stepanavan, Yeghegnadzor, Yeghvard and Ararat. Aarhus Centers in Armenia work in all three areas of the Aarhus Convention, including increasing public participation in decision-making processes and raising citizens' awareness of environmental issues and their rights. However, experts note insufficient funding for the centers, which limits the effectiveness of their work. Armenia is also a member of the UNECE Strategy "Education for Sustainable Development», but rarely presents the results of work in this direction.

In addition to participation in international environmental conventions, in 2017, the Comprehensive and Enhanced Partnership Agreement between the Republic of Armenia and the European Union was signed, which provides for the harmonization of environmental legislation, including actions to ensure public access to environmental information. The need to bring national legislation in line with international standards, as well as our own constitutional reform in 2015, led to the need to reform legislation in the field of ecology and environmental education. The discussion of the best EU practices with representatives of the Armenian side is held within the framework of the TAIEX (EU Technical Assistance and Information Exchange Instrument) expert missions.

As noted in [the National Report on the Implementation of the Aarhus](#)

[Convention](#) (2021), the 2015 Constitution changed the provision on the environment. Art. 12 of the RA Constitution stipulates that the state stimulates the protection, improvement and restoration of the environment, the rational use of natural resources, guided by the principle of sustainable development and taking into account the responsibility to future generations. Even before the above changes, the sphere of environmental education was regulated by [the Law of the Republic of Armenia on environmental education and upbringing of the population](#). The law determined the obligatory nature of environmental education at all levels of the educational system, its continuity and comprehensive nature. According to the Law, continuous environmental education includes the following levels: a) preschool environmental education and upbringing (environmental education in the family and in preschool institutions); b) secondary environmental education; c) secondary vocational environmental education; d) higher professional environmental education; e) postgraduate environmental education; f) environmental education and upbringing of broad sections of society, including those in the Armed Forces. The teaching of environmentally oriented subjects in all parts of the education system is carried out in accordance with state educational standards. The Law also defines the role of local governments and NGOs, but all provisions are of a general nature.

In 2018, the process of reforming the system of environmental education began. As noted in [the Fourth National Communication on Climate Change](#) (2020), after studying the situation in the field of environmental education, in February 2018, the Strategy for the Development of Environmental Education was approved. The goal of the Strategy was to improve the national system of environmental education, upbringing and enlightenment in Armenia, to strengthen harmonious and mutually beneficial cooperation in these areas between government agencies, the public and major international organizations. Cooperation is aimed at improving the quality of environmental education, raising the level of public awareness, and forming a pro-environmental mentality in society. The latter should ensure a conscious and responsible attitude towards the environment in society and contribute to improving the quality of life and the realization of the right to live in a healthy environment. Based on the Strategy, as well as international obligations, legislative changes and amendments to the Law on Environmental Education and Upbringing (March 2020) were developed.

In addition to the general legislative framework, environmental education is regulated by the provisions of the Laws on Education (1999), Preschool Education (2005) and General Education (2009). In addition, in September 2020, amendments and additions to the law "On Local Self-Government of the Republic of Armenia" were adopted. The law improves the prerequisites for environmental education and upbringing, in particular through environmental non-formal education and educational programs in communities. The adoption of the law follows from paragraph 6-1 of the protocol decision No. 7 of the Government of February 22, 2018 on the approval of the strategy

for the development of environmental education and upbringing. The law provides for an additional function on the program of promoting environmental education and upbringing in communities.

Thus, a modern legislative base is being created in Armenia for the development of environmental education in accordance with international standards. However, an urgent task is to fill this framework with scalable sustainable projects and practices.

Among the projects and programs important at the national level that ensure the development of environmental education, one can note the projects of the UN agencies (“Climate Box” - a UNDP project with the support of the Russian Federation, ABC climate change education guide - a UNDP project with the support of GEF, “Enhancing livelihoods in Rural Communities in Armenia through Mainstreaming and Strengthening Agricultural Biodiversity Conservation and Utilization” – a UNEP project supported by GEF) and the Acopian Center for the Environment at the American University of Armenia. Separately, it is worth noting the significant role of the Armenian diaspora in promoting the environmental agenda (as an example, the activities of the American University of Armenia and the Armenian Tree Project can be mentioned).

### **Consideration of the general framework for the development of environmental education in Armenia allows us to draw the following conclusions:**

- At the level of national legislation, serious steps are being taken in Armenia to develop and support environmental education.
- However, according to experts, this remains “on paper”, and no resources are allocated for the development of education in practice.
- NGOs (Armenian Tree Project, Armenian Environmental Network, Armenian Women for Health and Healthy Environment (AWHHE), etc.) do the main work on the implementation of environmental education projects in the country, the Acopian Center for the Environment at the American University of Armenia plays a significant role. Projects receive funding from international foundations and organizations (Armenian Diaspora, EU, Russian Federation, GEF), but environmental education initiatives have to compete for funding with more pressing humanitarian projects, so state support is sorely lacking.
- From the point of view of the content of training, we can talk about the predominance of projects related to nature conservation, biodiversity and agriculture.

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## Preschool education

In the field of pre-school education in Armenia, the possibilities of the state statistical reporting system are limited, therefore, international reviews are often based not on statistical data, but on survey data. According to the results of the study presented in the review [“Assessment of children’s access to preschool educational services in Armenia”](#) (2017), the involvement of children aged 3-5 years in the preschool education system is about 60%, while only 0.1% of children use educational services alternative to kindergartens. The problem with pre-school education is that access to institutions differs significantly in urban and rural areas. In this situation, one of the areas of environmental education can be the training of parents in the framework of programs to support early development.

The environmental education of preschool children is based on the Law on Environmental Education and Upbringing, as well as on the Law on Preschool Education. The new version of the Law on Preschool Education, as one of the tasks of the educational process, includes «introduction to the elements of nature and environmental protection, history and national culture of the Motherland.»

Despite the general framework of environmental education in kindergartens, the lack of a regular system for training kindergarten teachers undermines the continuous process of environmental education and upbringing. Ecological projects are being implemented in preschool institutions. For example, several national and international projects have developed climate change guides and manuals to support environmental education in early childhood education. In 2017, UNICEF supported the installation of photovoltaic systems in 3 preschool institutions, training seminars were held for children on alternative energy sources and energy saving. However, these projects are not regular and cannot ensure the sustainable functioning of the system.

### **Consideration of environmental education in preschool institutions in Armenia allows us to draw the following conclusions:**

- At the level of legislation and the work of government agencies, insufficient prerequisites are created for the development of environmental education in preschool institutions.
- According to experts, the lack of specialists and remuneration of teachers remains a significant problem.
- Not all environmental organizations apply to work with preschool institutions.

- The prospects for the development of environmental education at the preschool level, according to experts, are due to the fact that working with children of preschool age is effective for the formation of a worldview, children are not as busy with classes as schoolchildren, they are actively involved in activities, as well as the burden on teachers in preschool institutions, perhaps, is lower than for teachers in schools.
- According to experts, work with preschoolers can be carried out in the format of creative activities (songs, theatrical performances on environmental topics), which can also be effectively used in the system of preschool education in other countries of the region.
- Insufficient involvement of preschoolers in the education system makes it relevant to work on environmental education with parents.

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## General secondary education

Despite the existence of a legislative framework and the adopted Strategy for the Development of Environmental Education and Upbringing, school programs in Armenia currently do not meet all the necessary requirements for the formation of environmental consciousness in children. As part of the compulsory subjects defined by the curriculum for grades 2-12, there is no compulsory subject on ecology, there are only limited references to environmental issues. They can be found in the courses on «Geography», «Biology» and «Social Studies». To ensure a holistic and deep understanding of environmental issues within the framework of school subjects taught, it is important to ensure the continuity and coherence of environmental topics.

Another problem is the lack of teacher training. “The absence of a professional development program for teachers of environmental education” was noted in the Strategy for environmental education and upbringing adopted in 2018. To solve the problem, the National Institute of Education developed a 30-hour curriculum and manual on environmental education and upbringing for teachers. However, according to [the Fourth National Communication on Climate Change](#) (2020), no training was provided due to the lack of funds.

The development of environmental education in schools does not occur systematically, but mainly within the framework of individual projects of international

organizations and non-governmental environmental organizations in Armenia.

As an example of the activities of international organizations, the already mentioned Climate Box project, which has been implemented by UNDP since 2017 with funding from the Russian Federation, can be noted. As part of the project, experts from the National Institute of Education developed recommendations for including materials on climate change in certain sections of individual school subjects, taking into account the need to maintain the relationship between these thematic sections in the minds of students. The materials were tested in 15 schools in Armenia. As part of the project, 54 teachers and methodologists were trained. The curriculum of this course consists of five main sections, which include both theoretical and practical exercises. The general content of this training course teaches a waste-free and energy-saving type of behavior.

Every year, starting in 2017, at the initiative of UNICEF, one of the schools hosts the «World's Largest Lesson». The lesson discusses the Sustainable Development Goals (SDGs). During 2013–2019 the implementation of the SPARE (School Project on Application of Resources and Energy) training course continued at the expense of the Norwegian Society for the Conservation of Nature and the US and Canadian embassies in Armenia, the project coordinator was the environmental NGO Tapan Eco-Club. A large-scale educational project for secondary schools was implemented by the Armenia Tree Project team. Their four-day training program involved 1,600 teachers (including science teachers, class teachers, school directors).

**Consideration of the general framework for the development of environmental education in secondary schools in Armenia allows us to draw the following conclusions:**

- Despite the active involvement of NGOs in the dissemination of environmental education in schools, its development encounters many obstacles. According to experts, the efforts of eco-organizations to create a sustainable system are not enough, projects are difficult to scale, often they are one-time, they do not imply evaluation of effectiveness and maintenance. Human resources are quickly depleted, teachers are underpaid, educators are overwhelmed and it is hard to motivate them to spend extra time and effort on environmental education outside of the core curriculum.
- School programs, according to experts, are inert, it is very difficult to change the existing scheme of education.
- To increase the environmental orientation of school education, it is possible to introduce thematic classes in class hours, and it is also important to

supplement the environmental content of classes in natural sciences and within the framework of projects for the introduction of STEM education.

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## Vocational education

The review of environmental education in the framework of vocational education in both secondary specialized and higher educational institutions should include, firstly, training programs for environmental specialists, and secondly, teaching of environmental issues for students of other specialties.

In the academic institutions of Armenia, specialized units have been opened for teaching and researching environmental problems. These include the Educational and Scientific Center for Sustainable Development of the Yerevan State University, the Department of Ecology and Sustainable Development of the Armenian State Pedagogical University named after Khachatur Abovyan, UNESCO Chair in Education for Sustainable Development at the Center for Ecological and Noospheric Research of the National Academy of Sciences of the Republic of Armenia. Secondary specialized educational institutions in Armenia also train environmental specialists (for example, Kotayk regional college, Gyumri State Vocational School No. 4, etc.).

Preparing students of environmental specialties in Armenia faces certain difficulties. According to [the Fourth National Communication on Climate Change](#) (2020), in recent years, the number of students studying in the areas of ecology has significantly decreased. For comparison, in 2013 the number of students studying in these specialties at universities was 1105 people, and in 2018 this number decreased to 282 people. This is due, among other things, to the closure of some specialties due to a decrease in the interest of applicants.

The advantage of the Armenian education system can be considered that in secondary specialized and higher educational institutions for non-specialist environmentalists a mandatory course «Landscape science and the basics of ecology» has been developed, however, according to experts, its content needs to be improved in accordance with modern approaches. Many higher education institutions also teach environmental courses. It is worth noting that the Fundamentals of Ecology are taught at the Armenian State Pedagogical University as a compulsory course. Within the framework of this course, such topics as global environmental problems, environmental law, the convention on climate change, the impact of climate change on public health are

considered. Ecological courses are taught in architecture and construction, polytechnic and agricultural universities. Separately, it is worth mentioning the experience of the American University of Armenia, which has a mandatory environmental component for all master's students.

As in other countries, higher education institutions in Armenia make a significant contribution to the development of environmental education in general. Thus, at the American University of Armenia there is the Acopian Center named for the Environment. The center is engaged in the development of environmental education programs for university students, research, and dissemination of environmental education, including support for the Environmental Education Network, work with schools and local communities. Another example of the active work of universities in promoting the environmental education agenda is the proposal to create a network of higher educational institutions working in the field of sustainable development, using the rich experience of other countries in this area. Their representatives of the Department of Ecology and Sustainable Development of the Armenian State Pedagogical University after Khachatur Abovyan were nominated at the international conference «Towards the 2030 Agenda for Sustainable Development» (Eurasia International University, February 2020).

**Based on the results of the assessment of environmental education at the level of vocational education in Armenia, the following conclusions can be drawn:**

- The advantage of the vocational education system in Armenia is that environmental specialties are already being introduced on the basis of secondary specialized education.
- Universities, as in other countries, are drivers of environmental education development.
- However, the profession of an ecologist is becoming less and less in demand, the infrastructure for teaching the profession is being destroyed.
- According to experts, it is a good practice in the master's program at the American University of Armenia to provide mandatory environmental modules for students.
- Against the background of the fact that the student load is high and it is difficult to recommend compulsory courses in ecology for all specialties, it is important to introduce environmental issues into other related courses, to improve the qualifications of higher education teachers in this direction, which, as a rule, is not done.

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## Continuing education

Continuing education in the area of ecology, as a rule, is represented by non-formal educational projects for children and adults developed by NGOs or international organizations. Among environmental education for adults, the most notable projects are courses and training seminars for civil workers and school teachers.

As part of the implementation of the Strategy for the Development of Environmental Education and Upbringing, with the support of GEF and UNDP, the program «On the Creation of Global Environmental Benefits for Stakeholders through Environmental Education and Awareness» was implemented, within the framework of which training seminars were organized for 917 government officials on biodiversity issues, specially protected areas, forests, water resources, land protection, climate change, soil use, renewable energy and energy saving. Also, within the framework of the program, courses were held for representatives of the media and NGOs. In addition, the project included training seminars for 45 teachers, 18 of whom received certificates of trainers themselves as a result of the training.

In 2019, training seminars for teachers were held within the framework of the Green Bus project, carried out by the Ministry of the Environment with the support of the German International Cooperation Organization and aimed at promoting environmental knowledge and the formation of a respectful attitude towards the environment in different regions of the country.

On the basis of the Academy of Justice of the Republic of Armenia, work is being carried out to improve the skills of prosecutors and judges on issues of environmental law and the implementation of the Aarhus Convention.

However, according to experts, the most significant role in the development of additional environmental education in Armenia is played by local NGOs. Among such organizations are: Armenian Tree Project, Armenian Environmental Network, Armenian Women for Health and Healthy Environment (AWHHE), Association for Sustainable Human Development, Armenian Center for Democratic Education CIVITAS, Children of Armenia Foundation (COAF), Tapan Eco Club, Educational Foundation for the Environment and Sustainable Agriculture (ESA), Foundation for the Preservation of Wildlife and Cultural Assets (FPWC), Association of Young Biologists.

The main target groups for them are schoolchildren and teachers. The most notable in the direction of developing environmental education in schools are the projects of the Acopian Center for the Environment at the American University of Armenia and the Armenian Tree Project.

The already mentioned organization Armenia Tree Project develops environmental education projects, including those with local communities, teachers, schoolchildren and preschoolers. According to the organization's experts, 75.5 thousand schoolchildren and teachers went through their training events. The work is carried out in the format of educational events and training seminars for teachers, eco-clubs opened on the basis of schools (currently there are 33 eco-clubs), camps and visits to educational centers (3 Ohanyan Family Educational Centers are open). For teachers, the organization has developed [training materials and examples of lessons](#) on topics such as water, air, soil pollution, waste management, biodiversity, climate change, forest fires, desertification, etc.

The educational projects of the Acopian Center for the Environment at the American University of Armenia are related to the environmental education of children, including in schools. The "Natural Environment and Me" program is aimed at schoolchildren, within the framework of which students take training courses and participate in discussions on various environmental topics. Schools are developing the Edible School Yard project, in which schoolchildren study the processes of composting. The Center also participates in the work of the Environmental Education Network.

### **Consideration of environmental education in the form of continuing education in Armenia allows us to draw the following conclusions:**

- The main groups for whom it is important to improve their qualifications in environmental education - teachers and officials - are covered in Armenia.
- However, courses and training seminars, as a rule, are not systematic, the system of advanced training is unstable.
- Basically, continuing education in ecology is at the mercy of international organizations (with one-time projects) and NGOs.

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## **Conclusions**

Describing **the general conditions for the development of environmental education**, experts come to the conclusion that at the level of national legislation, serious steps are being taken to support it, but this remains "on paper", resources for the development of education are not allocated in practice. The main work on the implementation of environmental education projects in the country is done by NGOs. Projects receive funding from

international foundations and organizations (Armenian Diaspora, EU, Russian Federation, GEF), but environmental education initiatives have to compete for funding with more pressing humanitarian projects, so state support is sorely lacking. From the point of view of the content of training, one can speak of some advantages of the projects related to nature conservation, biodiversity and agriculture.

At the level of legislation and the work of government agencies, insufficient prerequisites are created for the development of environmental education in **preschool institutions**. According to experts, the lack of specialists and remuneration of teachers remains a significant problem. In addition, not all environmental organizations apply to work with preschool institutions. At the same time, according to experts, work with preschool children is effective for the formation of a worldview, children are not as busy with classes as schoolchildren, they are actively involved in activities, and the workload of teachers in preschool institutions may be lower than for teachers in schools. Insufficient involvement of preschoolers in the education system makes it relevant to work on environmental education with parents. According to experts, work with preschoolers can be carried out in the format of creative activities (songs, theatrical performances on environmental topics), which can also be effectively used in the system of preschool education in other countries of the region.

Despite the large number of environmental education **programs from NGOs in schools**, its development encounters many obstacles. According to experts, the efforts of eco-organizations to create a sustainable system are not enough, projects are difficult to scale, often they are one-time, they do not imply evaluation of effectiveness and maintenance. Human resources are quickly depleted, teachers are underpaid, educators are overwhelmed and it is hard to motivate them to spend extra time and effort on environmental education outside of the core curriculum. At the same time, the existing curricula, according to experts, are inert, it is very difficult to change the training scheme. To increase the environmental orientation of school education, it is possible to introduce thematic classes within class hours, and it is also important to supplement the environmental content of classes in natural sciences and within projects aimed at developing STEM education.

The advantage of the **vocational education** system in Armenia is that environmental specialties are already being introduced on the basis of secondary specialized education. Universities, as in other countries, are drivers of environmental education development. However, the profession of an

ecologist is becoming less and less in demand, the infrastructure for teaching the profession is being destroyed. According to experts, it is a good practice in the master's program at the American University of Armenia to provide mandatory environmental modules for students.

In the field of **continuing education**, it can be noted that the main target groups for advanced training in environmental education - teachers and officials - are covered in Armenia. However, courses and training seminars, as a rule, are not systematic, the system of advanced training is unstable. Basically, additional education in ecology is at the mercy of international organizations (with one-time projects) and NGOs.

# Belarus

## General framework for the development of environmental education

Description of the state of environmental education in Belarus requires consideration of international treaties and national legislation that determine the conditions for the development of environmental education in the country. Among the international treaties and strategies that affect the conditions for the development of environmental education, one can single out the Aarhus Convention - [the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters](#) (the Republic of Belarus withdrew from the convention in July 2022, the Aarhus Center, established in 2005 as part of a joint project of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus and the OSCE Office in Minsk to implement the provisions of the Aarhus Convention, as well as the UNECE Strategy for Education for sustainable development, in which the Belarusian side participates on a regular basis).

National legislation takes into account the need to develop environmental education. A detailed description of the legislative support for this direction is contained in [the report on the implementation of the Aarhus Convention by the Republic of Belarus](#) (2013), as well as in [the Seventh National Communication of the Republic of Belarus in accordance with the obligations under the UN Framework Convention on Climate Change](#) (2018).

In the «Code on Education of the Republic of Belarus» Art. 2 establishes the principle of environmental orientation of education, Art. 18 - the need to form a moral, aesthetic and ecological culture, one of the main components of education is called ecological education, aimed at forming a student's value attitude towards nature). Environmental education is mentioned in Art. 1 and Art. 12 of the Law «On Education». Chapter 13 «Education, enlightenment and scientific research in the field of environmental protection» was included in the Law «On Environmental Protection» in 2002, which, in addition to the three positions listed above, establishes requirements for the level of knowledge of employees whose activities are related to the use of natural resources and the impact on the environment. Art. 75 legislates the creation of a system of continuous environmental education and upbringing, including the formation of an environmental culture at each stage of the formal education system. Environmental topics are fixed [in the Concept of lifelong education](#). Along with the tasks of disseminating knowledge about nature, the concept contains a mention of the need to form a basis for the ideas of sustainable development. In addition, Chapter 8 of the Ecological Education Concept

establishes the need and required levels of training for environmental education of students at the level of preschool, school I, II and III stages, vocational, secondary specialized and higher education.

However, it should be noted that at the level of preschool and school education of the first stage, environmental education, according to the concept, is reduced to the formation of knowledge about nature, cognitive interest and humane (emotional and moral) attitude, which is reflected in educational programs. And only for students of the second stage, “the formation of the experience of social interaction and a responsible attitude towards the environment in all types of activities” is offered, and at the third stage - the systematization of knowledge about the environmental problems of society and the further development of value orientations that determine the attitude towards nature. At the level of vocational education, goals are declared to study the impact of production and professional activities on the environment and the formation of environmental competence as an integral part of vocational training, which removes the tasks for educational institutions to educate the environmental consciousness of non-specialist students whose professional activities do not affect the direct impact on the environment .

Environmental issues are mentioned in [the State Program «Education and Youth Policy» for 2021–2025](#). in the context of continuing education for children and youth (Subprogram 9), which declares development tasks within the framework of extracurricular activities of programs on education for sustainable development, respect for the environment and conservation of resources, while reinforcing the importance of a practice-oriented approach, involving families and developing scientific and research interest in environmental issues. Issues of environmental education, upbringing and informing the population as a separate section were included in the National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus for the period up to 2030, subparagraph 4.4.

Belarus has adopted [the National Action Plan for the Development of the “Green” Economy in the Republic of Belarus for 2021–2025](#). It is one of the key documents denoting the importance and setting the thematic framework for environmental education in Belarus. Among the priority areas for the development of the «green» economy, the Plan establishes education, training and social inclusion.

Thus, in Belarus the legislative basis for the development of environmental education, both formal and non-formal, has been formed, but they are of a framework nature and, as a rule, do not ensure the active implementation of environmental education programs at all educational levels. The goals of the development of environmental education at the level of preschool education, secondary specialized, higher and continuing education of non-specialist environmentalists are not clearly spelled out.

The institutional basis for the development of environmental education is based on specialized state organizations created for the development of environmental education, as well as on the activities of environmental and educational NGOs. The implementation of the Strategy “Education for Sustainable Development of Belarus” was facilitated by the public organization “Association of “Education for Sustainable Development”, established in 2014, which is currently in the process of liquidation. In addition to the «Association», in 2017 [the Coordinating Center «Education for Sustainable Development»](#) was created (on the basis of the Belarusian State Pedagogical University named after M. Tank). The Coordinating Center is engaged in competitive and educational projects on the topic of sustainable development among both school-age children and young people, and holds thematic conferences.

At the moment, in the International Sakharov Environmental Institute, [the Educational and Methodological Laboratory of Environmental Education](#) operates. Among the tasks of the laboratory is work both with students and support of student research activities, as well as with teaching staff in the direction of «disseminating innovative experience in environmental education and upbringing.»

Separately, it is worth mentioning the Republican Center for Ecology and Local History, whose work is aimed primarily at schoolchildren and thematically focuses on natural history and environmental protection activities. The institution is a resource center for the Green Schools initiative, and also distributes materials from [the Climate Box](#) collection (a manual and materials for conducting school lessons on the topic of climate change, recommended for the Green Schools project as well). In general, we can say that the institution is the central organization for the development of out-of-school environmental education.

### **Consideration of the general framework for the development of environmental education in Belarus allows us to draw the following conclusions:**

- In Belarus, at the legislative level, there is a basis and prerequisites for supporting environmental education. And despite the fact that there are no significant impulses for updating and modernizing legislation in this direction, the environmental education agenda remains in state programs.
- Certain efforts towards the implementation of the tasks of developing environmental education in the state are being made in a centralized administrative manner, which is typical for Belarus, which allows for the effective scaling of programs and initiatives.
- Among the main actors developing environmental education in Belarus are specialized centers and laboratories based on universities (BSPU named

after M. Tank, ISEI, GrSU named after Y. Kupala), the Republican Center for State Environmental Expertise and Advanced Training of Managers specialists of the Ministry of Natural Resources and Environmental Protection, Republican Center for Ecology and Local History. Many environmental NGOs that contributed to the development of environmental education and Education for Sustainable Development ceased their activities in 2021, which reduces the possibilities for organizational and content content of environmental education projects and initiatives.

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## Preschool education

Speaking about the introduction of environmental issues in preschool education in Belarus, it is worth highlighting the key features of the preschool education system. The vast majority of preschool institutions are state-owned, they provide education according to a standard educational program. [According to 2020 data](#), 86.1% of preschool children are involved in the system of preschool education. The standard educational program [«The Curriculum of Preschool Education»](#), in accordance with the concept of lifelong education, includes the educational area «Child and Nature», the content of which, depending on the age of children, varies from the formation of knowledge about animate and inanimate nature and an emotional attitude towards animals and plants to «skills of humane treatment of a living being, interest in a variety of activities in wildlife and inanimate nature, and the desire and skills to actively participate in nature conservation. At the same time, taking into account the control of the load of young children, classes within the same educational area are held once every 2 weeks and take from 10 minutes. Among the recommended literature, the topic of the environment is affected only by 2 manuals of a natural history topic (Streha, E. A. Familiarization of preschool children with nature: a guide for teachers of preschool educational institutions - Nar. asveta, 2012; Belous, A. N. Teach children to know the world : manual for teachers of preschool educational institutions - Minsk: Aversev, 2009).

In addition to the main teaching load, preschool institutions participate in various thematic events planned by the district Education Departments: the development of didactic materials, creative competitions, and projects. During the year, as a rule, seasonal competitions of creative works of preschool children and their families are devoted to natural history topics. Each year, additional events are devoted to a separate topic from educational areas in accordance with the program and the topic of a socio-

political nature. At the moment, most of the events are dedicated to patriotic education. Additional environmental education activities may be initiated by the district Inspectorates for Natural Resources and Environmental Protection.

Preschool institutions of Belarus, at the initiative of district education departments, are included in the «Green Schools» educational project (see below). However, the materials of the “Green Schools” project are designed for children from 5 years old, therefore, it may be difficult to develop and adapt materials for children of the younger group, as this requires additional knowledge and skills from educators. However, preschool institutions are actively involved in the work of the project, experts talk about one of the contributing factors for the development of environmental education in preschool institutions which is closer contact with the community and families of students, parents of children are willingly involved in projects, competitions and research, which gives additional motivation to teachers and facilitates their work.

The organization of additional classes in the format of circles on the basis of preschool institutions can be difficult, since this area is regulated in terms of program development, lesson materials and restrictions on the number of students (at least 10). Therefore, the development of this area requires additional efforts (assistance in the development of materials, attracting students) and incentives. Students can attend circles and sections outside the preschool educational institution, but at the age of 3–5 years, these are usually creative, sports or speech therapy developmental classes.

The professional development of preschool workers, as a rule, does not include specialized environmental components and is more often devoted to applied skills, for example, computer literacy.

**Based on the results of the assessment of environmental education in preschool institutions in Belarus, the following conclusions can be drawn:**

- In Belarus, there are prerequisites for the introduction of environmental education in preschool institutions, especially since the coverage of preschool children with educational services is quite high.
- Positive conditions for the development of environmental education in preschool institutions in Belarus, as in other countries of the region under study, are that their curriculum is more flexible, teachers are less paper-bound than school teachers, preschool institutions also have better contact with families of children, and thus the opportunity to involve the local community.
- At the same time, the existing programs provide only basic ideas, mainly of a natural history nature.

- The downside of the development of the system is also the fact that not enough materials have been developed for preschoolers to conduct environmental lessons, it is necessary to work in this direction.
- In addition to the development of supporting materials for environmental studies, in order to support environmental education at the preschool level, it is necessary to develop environmental practices in the activities of kindergartens themselves, as well as allow more flexible approaches without unnecessary organizational obstacles for organizing additional classes and circles.

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## General secondary education

Secondary education in Belarus is based on universal compulsory basic education and is implemented on the basis of standard curricula. Among the compulsory subjects in the school, there are no environmental subjects or those dedicated to sustainable development. Interaction with the environment is touched upon in the lessons «Man and the World» (grades 1-5, 1 hour per week), geography and biology (grades 6-11, 1-2 hours per week). The Ministry of Education approved elective programs on the topic of ecology: «Green Schools» for grades 1-9, «Fundamentals of radiation safety» for grades I-IX, «Myself, energy and the environment» for grades 2-4, «Ecological local history» for grades 2 –4, “Biosphere is our home” for grade 6, “Wildlife of Belarus” for grades 7–8, “Human ecology and evolution of the biosphere” for grade 11. However, as in the case of preschool institutions, the organization of extracurricular activities in schools has limitations - primarily in terms of the number of students (from 15 people), which makes the organization of additional education in schools much less flexible. It is difficult to assess the prevalence of certain extracurricular activities without a representative study of schools, but it is worth noting that the presence of the stamp of the Ministry of Education facilitates the work of teachers, eliminating the need to develop and approve programs.

The advanced training that school teachers undergo on the basis of various structures of the Ministry of Education may contain elements of the development of environmental competencies, but they are not of a systemic nature; courses devoted entirely to environmental issues are generally not offered. Among the topics of advanced training courses, teaching methods (the introduction of a competency-based approach) and the introduction of information technologies in the educational process prevail.

Taking into account the obligation of regular professional development, cooperation with organizations of the Ministry of Education responsible for the professional development of teachers (Educational Development Institutes) can be a productive direction for introducing environmental topics into compulsory courses, developing tools for extracurricular activities and disseminating the principles of sustainability in the organization of school work.

Among the notable projects aimed at supporting environmental education in schools are the recent School Project on Application of Resources and Energy (SPARE), the Green Schools project mentioned above, as well as projects on education for sustainable development, including the Partnership Network « Schools of sustainable development”.

The SPARE project in Belarus took place in 2009–2015. In general, the program is a comprehensive educational model that integrates knowledge in the field of environmental protection, resource and energy conservation, and climate conservation into the school curriculum.

The goal of the Green Schools program is to create a network of schools and out-of-school educational institutions that care about environmental education and upbringing of schoolchildren and demonstrate practical steps in environmental protection. According to the data for 2020, [332 educational institutions](#) were included in the project (most of them are secondary schools, in addition to preschool institutions and institutions of additional education). The essence of the project is the implementation by the educational institution of activities in 6 areas (Biodiversity, Energy Saving, Water Saving, Waste Management, Air Quality, Information and Environmental Activities for Work with the Local Community) for 3 years and participation in the competition based on the results of the project. To support the implementation of the project for educational institutions, materials, an elective program «Green School» and a textbook have been developed. The institutions are supported and the results are evaluated by [the Republican Center for Ecology and Local History and a network of resource centers in the regions](#).

Various projects and activities within the framework of the concept of education for sustainable development [have been implemented in Belarus since the early 2000s](#). ESD projects are being implemented in school education institutions - secondary school No. 12 in Navapolack, ecological gymnasium No. 19 in Minsk, etc., as well as in institutions of out-of-school education - the Republican Center for Ecology and Local History. In 2003, with the assistance of the UN Office in the Republic of Belarus, a set of educational materials on sustainable development «Educational materials for sustainable development» was published.

It is worth noting the significant role of the Belarusian–German project

“Partnership Network of Schools for Sustainable Development: Interregional Cooperation and Sustainable Change”, [the introductory seminar of the project was held in May 2013.](#)

It is worth noting that there are a number of barriers to offering courses and additional classes on environmental topics at schools. Among them are the availability and accessibility of a large number of free circles and additional classes and the tendency of parents of children to make a choice in their favor (in connection with which there are difficulties for extrabudgetary activities of schools in the development of paid circles and additional classes, and this situation can be extrapolated to additional education of schoolchildren in general), as well as organizational barriers to the introduction of electives, associated with the need to provide a certain number of students (15 people) for electives and the need to approve programs.

**Consideration of the general framework for the development of environmental education in secondary schools in Belarus allows us to draw the following conclusions:**

- At the level of secondary education, there are no compulsory environmental subjects in the curriculum.
- However, environmental education in Belarusian schools is developing in the format of additional classes and electives, there are resource centers for various projects, and educational materials are published. An important impetus for this can be various programs and projects, within which the efforts of state bodies, NGOs and international organizations are accumulated.
- Nevertheless, for the effective implementation of this direction there are barriers arising from the complexities of the education system: a large workload of teachers, a large number of mandatory planned extracurricular activities (competitions, project preparation, etc.).
- Barriers remain to the organization of extracurricular activities related to the minimum number of students and the mandatory approval of elective programs.
- Performance is highly dependent on the availability of motivated, engaged educators and is not systematically ensured.

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## Vocational education

The situation with environmental education in vocational education institutions can be considered, firstly, from the point of view of the availability and specifics of environmental specialties in Belarusian universities, and secondly, from the point of view of environmental education for students of other specialties.

Some vocational and secondary specialized educational institutions in Belarus provide training in specialties related to environmental issues, such as a technician-technologist in environmental protection and rational use of natural resources, but this is not a common practice, and there are no specialized environmental educational institutions at this level. Higher education in an environmental specialty in Belarus can be obtained at the Baranovichi State University, the Belarusian State University of Food and Chemical Technologies in Mahilioŭ, the Brest State Technical University, the Brest State University named after A.S. Pushkin, Vitebsk State University named after P. M. Masherov, Gomel State University named after Francysk Skaryna, Grodno State University named after Yanka Kupala, the Belarusian National Technical University, the Belarusian State Technological University, as well as the Belarusian State University and the International Sakharov Environmental Institute, which is part of the Belarusian State University named after A.D. Sakharov.

Thus, environmental specialties are most often represented in technical universities and meet the existing demands of the labor market, where environmentalists are in demand, as a rule, in large industrial organizations, the housing and communal services system and the system of state inspections of natural resources and environmental protection.

Despite the rather high level of training in the natural sciences in the system of secondary and higher education, according to experts, the knowledge of environmental graduates is ahead of the demands of employers, who set the task for specialists to find solutions to formally bring the standards of organizations to existing legislation without introducing new technologies aimed at saving resources and protecting the environment. The insufficient level of development of projects and technologies in the field of environmental protection and the «green» economy is determined by the low requirements for environmental specialists.

Among non-environmental specialists, courses in ecology are introduced for students of technical and technological specialties in order to learn how to conduct professional activities in accordance with the requirements of environmental legislation. According to [the Seventh National Communication of the Republic of Belarus in accordance with the obligations under the UN Framework Convention on Climate Change](#)

(2018), the number of students studying environmental disciplines, including disciplines related to climate protection, in higher educational institutions of the Republic of Belarus reached 75916 (about 30% of university students).

In some specialties (geography, tourism, social work, etc.), students in the country's universities are taught the course «Fundamentals of Ecology and Energy Saving», but it is not mandatory. It is important to note that the development of the higher education system within the framework of the Bologna process and the division of the educational process into 2 stages - a 4-year bachelor's degree and a master's degree - makes it necessary to reduce hours for general education courses for bachelors (which is in line with the best practices and recommendations of international organizations for the professionalization of higher education and its quality), and the master's program, in which training is often reduced to a 1-year program, should be devoted to narrowly professional subjects and the development of research competencies in the direction of specialization, which also does not imply the inclusion of general education courses in ecology. Thus, for the development of students' environmental consciousness, it is necessary to stake on the inclusion of environmental issues in other subjects.

A survey of students of non-environmental specialties, conducted at BSU in 2017, [showed](#) that the understanding of the system of interrelationships «Man-Society-Nature» is instilled in students rather than in specialized environmental courses. The authors of the study note that, in general, the results of evaluating different disciplines in terms of revealing the indicated relationship are not very high. “The leading position in the disclosure of most of the considered connections is occupied by the academic subject “Philosophy”; very close to it in terms of the type of relations “society-nature”, “man-nature” is “Safety of human life” (24.7% and 21.2%, respectively), and “Fundamentals of Psychology” ranks first in the block of human relations with other people. The academic discipline «Fundamentals of Ecology and Energy Saving» is only at the fifth level of the rating, ahead of the «Fundamentals of Modern Natural Science», and such courses as «Protection of the population and objects in emergency situations» and «Radiation safety» are at the end of the list. From the results obtained, the authors of the study conclude that the implementation of the tasks of environmental education in higher education should occur not only through the development of specialized compulsory courses on ecology, but also through the introduction of the education of environmental awareness in the educational process as a whole. In particular, to solve this problem, BSU specialists prepared a manual [“Fundamentals of Pedagogy: Formation of Environmental Competence”](#) for teaching a course of pedagogy, the content of which is distinguished by an environmental orientation.

Separately, it is worth noting the role of higher education institutions in the development of environmental education at different levels ([Coordinating Center](#)

«Education for Sustainable Development» on the basis of the Belarusian State Pedagogical University named after M. Tank, Educational and Methodological Laboratory of Environmental Education at the International Sakharov Environmental Institute, Scientific and research laboratory of environmental education «Environmental Pedagogy» at the Pedagogical Faculty of the Yanka Kupala State University).

**Based on the results of the assessment of environmental education at the level of vocational education in Belarus, the following conclusions can be drawn:**

- Vocational and secondary specialized environmental education in Belarus is poorly developed.
- The disadvantage of training specialists at the level of higher education is that, as a rule, it has a narrow technical or technological focus. There are no specialties related to sustainable development in the training system.
- The knowledge of environmental graduates is ahead of the demands of the labor market and employers, which often come down not to the development of environmental approaches to work, but to formally bring the standards of organizations' activities to existing legislation.
- In the concept of lifelong education, there is no development of ecological consciousness of students of non-environmental specialties.
- Hours for teaching ecology as a general education subject are reduced when drawing up bachelor's curricula, so it is important to work on the introduction of environmental issues in other courses and improve the qualifications of teachers in other disciplines in this direction.
- The advantage of the higher education system is that, on the basis of some universities, environmental education centers are being developed (International Sakharov Environmental Institute, Belarusian State Pedagogical University named after M. Tank, GrSU named after Yanka Kupala), there are separate attempts to generalize experience and introduce environmental education in all courses, not only specialized, but they are not widely distributed.

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## Continuing education

Continuing adult education can be divided into continuing professional education (training courses) and non-professional non-formal education aimed at developing environmental awareness of citizens.

Advanced training courses in environmental specialties in Belarus are offered by such institutions as the Academy of Management under the President of the Republic of Belarus, the Institute for Advanced Studies and Retraining of Managers and Industry Specialists «Industry Personnel», the Branch of the BNTU «Intersectoral Institute for Advanced Studies and Retraining of Personnel in Management and Personnel Development», The Institute for Retraining and Advanced Training of the University of Civil Protection of the Ministry of Emergency Situations of Belarus, separate courses on environmental topics are presented at the Institute of Business of Belarusian State University, the Belarusian Research Institute of Transport «Transtekhnika», the Private Institution of Additional Education for Adults «Center for Training, Advanced Training and Retraining of Workers» (Viciebsk). The largest selection of advanced training courses in specialties related to ecology (mainly of an applied technical nature on compliance by organizations with environmental legislation, which meets the demands of the labor market for environmental specialists, as in the above institutions) is offered by the State Educational Institution [«Republican Center for State Environmental expertise and advanced training of managers and specialists»](#) of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus.

At the same time, in order to foster environmental consciousness and support education for sustainable development, a significant audience for advanced training is preschool teachers and teachers of secondary schools, in addition, university teachers of non-environmental specialties to introduce elements of environmental topics into programs. According to experts, there is also a lack of advanced training in the direction of sustainable development for employees of state bodies and, in particular, local administrations to develop environmental approaches in organizing the life of settlements. The National Action Plan for the Development of the “green” economy in the Republic of Belarus until 2020 included holding training seminars on the “green” economy for specialists from local executive and administrative bodies and making proposals on the inclusion of the topic «Green Economy» in the plans for conducting advanced training courses for civil workers, however, at the moment there is no information about programs on such topics in the public domain.

Raising environmental awareness and educating citizens on environmental issues was largely done by civil society organizations, many examples of whose activities are presented in the report [“Responsible consumption and production in Belarus.”](#)

Trends, barriers, recommendations. Public review of the implementation of Sustainable Development Goal 12". In addition, both state environmental organizations, institutions of additional education, and private organizations organize educational outdoor events (lectures, ecological trails, etc.) of a natural history orientation, which include natural history courses Kryly.by. In addition, Internet users have access to various online courses on urban ecology, organic agriculture, and the basic principles of an eco-friendly lifestyle.

**Consideration of environmental education in the form of additional education in Belarus allows us to draw the following conclusions:**

- In Belarus, organizational efforts are being made to develop additional environmental education - retraining and advanced training, there is an institutional basis for this, and this experience should be extended to other countries in the region.
- However, the topics of the courses remain narrowly technical and do not cover general approaches to sustainable development. In addition, the audience of courses should be expanded to include representatives of local executive authorities, preschool and school teachers and university professors.
- A significant contribution to environmental education for children is made by out-of-school education centers, including the Republican Center for Ecology and Local History and regional centers for ecology, tourism and local history. Along with outdoor events, thematic circles and courses are organized there, but more often on natural history and environmental topics. The problem of out-of-school education in the regions may be the unwillingness of parents to pay for such classes for children against the background of the fact that the offer of free courses is often quite wide, and the limited time resources of schoolchildren.

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## Conclusions

Describing the general framework for the development of environmental education in Belarus, we can say that at the legislative level there is a basis and prerequisites for its support. Despite the fact that there are no significant

impulses for updating and modernizing legislation in this direction and it is unlikely that they can be expected in the future, the environmental education agenda remains in state programs. At the same time, certain efforts towards the implementation of the tasks of developing environmental education in the state are being made in a centralized administrative manner that is characteristic of Belarus. Among the main actors developing environmental education in Belarus are specialized centers and laboratories based on universities (BSPU named after M. Tank, International Sakharov Environmental Institute, GrSU named after Y. Kupala), the Republican Center for State Environmental Expertise and Advanced Training of Managers and Specialists of the Ministry of Natural Resources and Environmental Protection, Republican Center for Ecology and Local History. Many environmental NGOs that significantly contributed to the development of environmental education and Education for Sustainable Development have been eliminated, which reduces the possibilities for organizational and content content of environmental education projects and initiatives.

Describing environmental education at **the preschool level**, we can say that conditions for its development are being formed in Belarus, especially since the coverage of preschool children with educational services is quite high. However, the existing programs provide only basic ideas, mainly of a natural history nature. The downside of the development of the system is also the fact that not enough materials have been developed for preschoolers to conduct environmental classes, it is necessary to work in this direction. Positive conditions for the development of environmental education in preschool institutions in Belarus, as in other countries of the region under study, are that their curriculum is more flexible, teachers are less paper-bound than school teachers, preschool institutions also have better contact with families of children, and thus the opportunity to involve the local community. In addition to the development of supporting materials for environmental studies, in order to support environmental education at the preschool level, it is necessary to develop environmental practices in the activities of kindergartens themselves, as well as allow more flexible approaches without unnecessary organizational obstacles for organizing additional classes and circles.

Despite the absence of compulsory environmental subjects in the curriculum of **general secondary education**, environmental education is being developed in schools in Belarus, resource centers for various projects are operating, and educational materials are being published. However, for the effective implementation of this direction there are barriers arising from the complexities of the education system (typical for all countries of the region): a large workload

of teachers, a large number of mandatory planned extracurricular activities (participation in competitions, preparation of projects, etc.). Performance is highly dependent on the availability of motivated, engaged educators and is not systematically ensured. Barriers remain to the organization of extracurricular activities related to the minimum number of students and the mandatory approval of elective programs.

Environmental education within the framework of **vocational education** at the level of vocational and secondary specialized educational institutions is poorly developed. The disadvantage of training specialists at the level of higher education is that, as a rule, it has a narrow technical or technological focus. There are no specialties related to sustainable development in the training system. The qualifications of environmental graduates are often ahead of the demands of the labor market, and the work of environmentalists at enterprises is often formal. In the concept of lifelong education, there is no development of ecological consciousness of students of non-environmental specialties. Hours for teaching ecology as a general education subject are reduced when compiling bachelor's curricula. The advantage of the higher education system is that, on the basis of some universities, environmental education centers are being developed (ISEI, Belarusian State Pedagogical University named after M. Tank, GrSU named after Yanka Kupala), there are separate attempts to generalize experience and introduce environmental education within all, and not only specialized courses, but they are not widely distributed.

In Belarus, organizational efforts are being made to develop **continuing environmental education** in the form of retraining and advanced training, and there is an institutional basis for this (there is a Republican Center for State Environmental Expertise and Advanced Training of Executives and Specialists) - and this experience should be extended to other countries in the region. However, the topics of the courses remain narrowly technical and do not cover general approaches to sustainable development. In addition, the audience of courses should be expanded to include representatives of local executive authorities, preschool and school teachers and university professors.

# Moldova

## General framework for the development of environmental education

As in other countries participating in the study, the state of environmental education in Moldova in terms of external conditions is determined by the country's participation in international treaties and conventions on environmental protection, national legislation and general political conditions for the development of the education system. For the development of environmental education, it is important that Moldova is a party to the Aarhus Convention - [the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters](#), and ratified it one of the first - in April 1999. Moldova takes part in other initiatives under the auspices of the UN. According to Art. 8 of the Constitution, the Republic of Moldova undertakes to comply with the Charter of the United Nations and the treaties to which it is a party, for example, [the UN Framework Convention on Climate Change](#) and the UNECE Strategy «Education for Sustainable Development», but is less active than neighboring countries. As noted in [the Third Environmental Performance Review](#) (2014), systematic action towards education for sustainable development has not been carried out and the legal framework has not been developed. The goal of the Ministry of Environment to develop an ESD strategy together with the Ministry of Education was not achieved. The initiatives are mostly fragmented, implemented mainly by civil society organizations with the support of international projects. The Moldovan side passively participates in the meetings of the Steering Committee of the Strategy. According to the authors of [the Informal Reporting Document on the Implementation of the UNECE Strategy Education for Sustainable Development](#) (2021), in Moldova, despite the presence of elements of education for sustainable development, “the factor of promoting this innovative concept is completely absent”. To a greater extent, according to experts, the principles of sustainable development are being introduced into the practice of education and economic management under the general framework of the SDG agenda.

In addition to international conventions, the development of environmental education in Moldova is influenced by the country's obligations under the Association Agreement with the EU. As noted in [the Informal Reporting Document on the implementation of the UNECE Strategy «Education for Sustainable Development»](#) (2021), the association agreement with the European Union is directly aimed at ensuring sustainable development and promoting a «green» economy in Moldova. By signing the Agreement, the Republic of Moldova undertakes to harmonize national legislation with European legislation and ensure the integration into the national legal framework of

provisions on environmental protection, rational use of resources and energy efficiency, eco-labeling, eco-innovations in all sectors of the national economy and public life. For example, Government Decree No. 1467 of December 30, 2016 on approving the Regulation on Public Access to Environmental Information transposes Directive 2003/4/EC of the European Parliament and of the Council of January 28, 2003 on public access to environmental information. Law no. 86 of May 29, 2014 on environmental impact assessment partially transposes Directive 2011/92/EU of the European Parliament and of the Council of December 13, 2011 on the environmental impact assessment of certain public and private projects and establishes the legal basis for the operation of the impact assessment mechanism on the environment of certain public and private projects or certain types of planned activities to prevent or minimize negative impacts on the environment and public health at an early stage.

At the national level, the sphere of environmental education is covered by [the Environmental Strategy for 2014-2023](#), approved by Government Decision no. 301 of April 24, 2014, which guarantees the right of the population of the Republic of Moldova to a clean and healthy sustainable environment in harmony with economic development and social well-being. The field of education is regulated by the Constitution of the Republic of Moldova of July 29, 1994 (art. 35), [the Code of the Republic of Moldova on Education of July 17, 2014 No. 152](#), the Law of the Republic of Moldova on environmental protection (art. 9, 30). Article 4 of the Education Code states that education in the Republic of Moldova is a national priority and a key factor in the sustainable development of a knowledge-based society. According to [the Report on the Implementation of the Aarhus Convention](#) (2021), in order to promote environmental education policy at the level of the national general education system, the Ministry of Education and Research, in accordance with [the Strategy](#), develops and promotes school optional classes on ecology, develops and distributes, together with the Ministry of the Environment information materials designed to inform, raise awareness and environmental education of the population, organize classes on eco-development for the younger generation to form the proper attitude, rational use of natural resources, improve the state of the environment, preserve biodiversity for future generations, popularize alternative energy sources (organization of republican environmental Olympiads and support for the participation of students in the International Olympiad in Ecology, replenishment of state funds of libraries, schools, universities with books that popularize science aimed at improving environmental awareness and educating the younger generation). In turn, the Ministry of the Environment and subordinate institutions have taken a number of measures and actions, such as the development and approval of [the Strategy for Communication of Environmental Information for 2020–2022](#), the development and implementation of the Action Plan for environmental education of the population. However, in addition to the optional school course, the activities of state bodies to involve the population in the

environmental agenda are carried out in the traditional format for post-Soviet countries: landscaping, planting trees, drawing competitions, etc.

From the point of view of promoting environmental education in Moldova, at the moment it is difficult to identify organizational structures that combine the efforts of state bodies and civil society and can act as a locomotive for the development of environmental education. Projects in the direction of environmental education and enlightenment, which the Ministry of the Environment [reports](#) on the implementation of the Aarhus Convention, are, as a rule, the publication of various guides and bulletins (collection of 7 volumes «Fauna and flora of Moldova», collection «Geographical environment of Moldova»), actions (republican competition «The greenest and most comfortable settlement», «City without my car»), thematic exhibitions. As a positive example, we can note the existence of the National Environmental Fund (strengthening the National Environmental Fund and local environmental funds and increasing the effectiveness of their activities were also identified as the objectives of [the Strategy](#)), on whose support environmental education projects can count. There are two Aarhus Centers in the country. The first center was established in Chisinau in 2012. In 2013, a Public Environmental Center was opened in Bendery. The activities of the two Aarhus Centers in Moldova include issues of access to environmental information, environmental research and raising awareness of the Aarhus Convention. With the support of UNDP for Moldova, the materials of [the «Climate Box»](#) were localized. With the support of the national coordinator “Gutta-club”, the School Project on Application of Resources and Energy (SPARE) is being implemented, which involves about 250 schools. Many environmental NGOs are working on projects under the GEF SGP Small Grants Program. It is important to note that the country has a specialized environmental university - the Chisinau College of Ecology, which not only trains students, but is a center for training teachers of environmental disciplines for vocational institutions. At the same time, it should be noted that the quality of training in this institution is quite low.

### **Consideration of the general framework for the development of environmental education in Moldova allows us to draw the following conclusions:**

- Despite the fact that in Moldova a legislative base is being created for the development of environmental education that meets modern standards, the efforts of the executive bodies for the effective implementation of the goals set are still not enough.
- As barriers, experts cite the lack of financial resources and personnel, as well as the poor quality of governance and corruption that characterized public policy before the change in political course in 2019.
- According to experts, the problem of dependence of environmental

education for sustainable development on donor support remains relevant.

- In Moldova, at the moment it is difficult to single out organizational structures that unite the efforts of state bodies and civil society and can act as a locomotive for the development of environmental education. To advance the agenda of environmental education and education for sustainable development, it is important to create organizational structures with the participation of higher education institutions (to develop the potential of the Environmental College, etc.) and create networks to unite the efforts of government bodies, educational institutions and civil society organizations.

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## Preschool education

Pre-school education in Moldova is represented, as a rule, by state institutions, the system of which is actively developed and supported. According to [the Report "Childcare, Women's Employment and the Impact of COVID-19: The Case of Moldova"](#) (2021), since 2010, the number of preschools has increased by 7.5%. Among 1485 pre-school institutions, three-quarters are located in rural areas, among them only 12 private kindergartens. The level of pre-school education coverage in Moldova is very high, for children aged 3-6 in 2019 it was 95.6%.

### **Consideration of environmental education in preschool institutions in Moldova allows us to draw the following conclusions:**

- Moldovan legislation does not place a special emphasis on the development of environmental education in preschool institutions.
- Separate projects are being carried out with preschool institutions to introduce the environmental agenda.
- At the same time, according to experts, the programs of preschool institutions can be more flexible to introduce elements of environmental education.
- A positive prerequisite for the effectiveness of environmental education at the level of preschool institutions is a very wide coverage of preschool children with educational services.

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## General secondary education

The development of environmental education in institutions of general secondary education in Moldova is focused on three areas: in the compulsory classes of the curriculum, extracurricular activities and extracurricular activities.

In 2010 and 2006, respectively, the curricula of primary schools and schools of senior and secondary levels were revised, and certain aspects of the study of the environment were included in the subject «Civic Studies». Primary school curricula include selected environmental aspects in the Mathematics, Science and Technology module. At the secondary school level, environmental issues are included in the programs of study of various disciplines: biology, chemistry, physics - but it is only optional. Their teaching depends on the interest of students and, first of all, the teacher.

The Ministry of Education and Research, in accordance with [the Strategy](#), in 2016 developed and implemented the optional lesson «Environmental Education» at all levels of general education in the list of optional classes from the educational proposal of the Framework Plan for primary, secondary and senior education. A curriculum for the optional class of grades 1-12 was also developed and approved. Schoolchildren in Moldova must choose an elective class, among which is the subject «Environmental Education», and if there are 15 people who want to attend it, the school provides such an opportunity. In addition to the materials of extracurricular activities, in 2019, within the framework of the UNDP project for Moldova, educational materials were prepared on the topic of climate change and greenhouse gases within the framework of [the «Climate Box»](#).

As for extra-curricular activities, it is a tradition in schools to start the school year with an “Ecological Hour”, the materials for which are developed by the Ministry of the Environment and its structures, and the topics differ depending on the current agenda (for example, on the topic of air as part of the European Mobility Week, on the topic of water resources, etc.).

If there are interested teachers in the school, they have the opportunity to participate in a large number of competitions and projects, including environmental topics, some of which are recommended by the Ministry of Education and Research.

### **Consideration of the general framework for the development of environmental education in secondary schools in Moldova allows us to draw the following conclusions:**

- Despite concrete steps to introduce environmental education in schools, primarily in the format of electives, according to experts, the approach needs to be adjusted.

- Specialists from environmental organizations and representatives of the teaching community draw attention to the fact that environmental studies within the framework of a specialized elective and traditional courses of the program need an individual approach, practical orientation and education of both the values and skills of an eco-friendly lifestyle.
- To solve this problem, the approach to teaching environmental topics should be more systematic, and methods should differ from traditional methods of teaching natural sciences. Schoolchildren need to form a systemic worldview, an idea of the inseparability of all aspects of human life with an environmental agenda and the internal interconnections of all aspects of the functioning of the environment. The proportion of practical training should be increased, and the topics of courses and training materials should be balanced and cover all current environmental problems.
- To do this, it is necessary to provide specialized training for teachers on environmental topics, increase the practical orientation of classes and revise approaches to practical classes so that their content meets the current needs of modern environmental education (courses for teachers are laid down in [the Strategy](#), their preparation is scheduled for 2023). These recommendations can be extended to the system of general secondary education in other countries of the region.

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## Vocational education

If we talk about environmental education at the level of vocational education, we can single out the teaching of ecology at the level of vocational or secondary specialized education, as well as at the level of higher education, and it is worth noting both the training of environmental specialists and the teaching of environmental disciplines to non-ecologists.

As noted in [the Third Environmental Performance Review](#), as early as 2014, environmental education was integrated into vocational curricula, with donor support contributing to the achievement of strategic goals in this sector.

One example of such support was the work of the Austrian Development

Agency, which since 2008 has been assisting the Ministry of the Environment in developing and updating curricula for water sanitation professionals. Another example of foreign technical assistance is the project on the greening of technical vocational education for a green economy, implemented with the support of the German Agency for International Cooperation (GIZ). The executor of the project is the Chisinau College of Ecology. The main goal of the project is the greening of institutional culture, the greening of communities and workplaces, as well as the process of introducing greening practices into vocational education. Teachers of vocational schools are being trained to introduce the module of the «green» economy, education for sustainable development in the vocational training programs for students.

As part of the commitments made by the Republic of Moldova within the framework of the Association Agreement with the EU, the Energy Community Treaty and INDC (2015), new modules are being introduced in the vocational education system: “Power plants, renewable energy sources” and “Thermal installations on solid biofuels” for the specialty “Boiler Operator”, as well as “Installation of solar thermal panels” and “Operation of heating installations and solar heating panels” for related specialties “Installer of heating installations and solar equipment - Installer of installations, apparatus and equipment for ventilation and air conditioning”. The Profession Profile and the Occupational and Technical Standard for Environmental Protection have also been developed and approved.

Moldova has a well-developed system of higher education, several universities conduct research on environmental and environmental issues, including within the framework of international cooperation projects. The Chisinau Ecological College is engaged in the preparation of future environmental engineers and laboratory specialists. Although this college is administered by the Ministry of Education, its curriculum is developed in close cooperation with the Ministry of the Environment. At the State University, the Faculty of Biology and Soil Science has a special curriculum for the preparation of specialists at the bachelor’s and master’s level in ecology and environmental sciences. The Faculty of Chemistry has developed curricula for industrial and environmental chemistry, environmental protection and environmental safety. The State Agrarian University also studies environmental disciplines such as ecology and tourism and agroecology. At the Faculty of Engineering and Management in Mechanical Engineering of the Technical University, new professional competencies are being developed in accordance with international standards. This work is carried out in order to improve products and technological processes that affect the safety of the environment. Within the framework of the EU technical assistance program TEMPUS in 2010-2013, the CREDO project (doctoral program in renewable energy and environmentally friendly technologies) was developed.

Despite certain steps in the development of vocational and higher environmental education, the number of applicants for environmental specialties is declining, and new specialties related to environmental issues are not popular.

**Based on the results of the assessment of environmental education at the level of vocational education in Moldova, the following conclusions can be drawn:**

- There are a number of difficulties in the field of professional environmental education in Moldova. According to experts, they are associated, among other things, with the low prestige of the ecologist profession and the low quality of training. Often there is a situation that applicants choose environmental specialties on a residual basis in order to simply receive a diploma of higher education.
- In the labor market, environmentalists are in demand in environmental inspections, laboratories, and meteorological services.
- Working in their specialty, graduates do not preserve the values of environmental protection and protection, do not see the impact of their work on its condition.
- To solve this problem, according to experts, it is important to develop environmental values and attitudes among teachers and students of environmental specialties, as well as to form a professional community, which can be achieved through additional education and advanced training programs for both students and teachers. This strategy may be relevant for other countries in the region under consideration. A key element in improving the quality of environmental education is the improvement of working conditions for teachers (increasing salaries, debureaucratization of the educational process, providing opportunities for the exchange of experience), as well as for graduates of environmental specialties in government structures.

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## Continuing education

In assessing continuing environmental education, it is necessary to dwell on the formal education system and courses for retraining and advanced training of specialists, as well

as to mention non-formal education, the development of which is being made by non-governmental organizations and which is aimed at children, professional groups or the general public.

It is worth mentioning that in Moldova there is no separate center for advanced training in the field of ecology. If we talk about the advanced training of civil servants, it mainly takes place on the basis of the Academy of Public Administration. Its structure and educational programs have been brought in line with international standards, and within the framework of the retraining program for civil servants, courses related to the environment are taught, but there is no more systematic environmental program in the curricula. Various institutions subordinated to the Ministry of the Environment (State Ecological Inspectorates, etc.) organize training sessions for their employees and other interested parties. The training of civil servants is also carried out within the framework of various projects, including UNDP and other international organizations, but is not systematic and depends on donor support.

Separately, it is worth mentioning the training of teachers. At the moment, there is no special training program for teachers on the topic of the environment, but [the Environment Strategy for 2014-2023](#) has as a target for 2023 “Ensuring the training of teachers so that they acquire the necessary competencies to teach an environmental course. upbringing». At the same time, environmental modules are gradually being introduced into the programs of regular teacher training courses, which are held once every five years. The Ministry of Education is implementing initiatives to retrain teachers and assess their professional level, in connection with which, in 2010, the basic curricula for continuing education of teachers were adopted. Despite these positive results, the issue of environmental education was not directly raised. In addition to the work carried out by the Ministry of Education, teacher training activities are organized within the framework of projects implemented by the Ministry of the Environment with the participation of specialized NGOs.

Among the non-governmental organizations actively developing the direction of environmental education, one can name such as “Gutta-club” (is the coordinator of the SPARE project, organizes educational programs for teachers, organizes competitions and publishes materials on environmental topics), “EcoVisio” (develops and distributes methods of non-formal education in support of sustainable development in the region, works with teachers, including on the basis of its own educational center) and the Alliance for Energy Efficiency and Renewable Energy AEER (one of its goals is education and enlightenment on energy efficiency and to achieve it is very active with schools, including the development and dissemination to schools of [a Practical Guide to Planning and Implementing Sustainable Measures to Improve the Ecological Environment of Schools](#), guidelines for greening schools and running institutions in a sustainable way.

development). In addition, many environmental organizations have an educational component in their projects (“Eco-Tiras”, “Association for Waste Recovery AVD”, “Biotica”, etc.). At the initiative of environmental NGOs in Moldova, separate courses are offered on a paid and free basis (general environmental topics, organic farming, etc.), but this practice is not very common.

### **Consideration of environmental education in the form of continuing education in Moldova allows us to draw the following conclusions:**

- Continuing environmental education in Moldova has room for development. Strengthening this component can be facilitated by the creation of specialized institutions for advanced training and retraining of workers in environmental specialties, the introduction of programs for the systematic environmental training of teachers at all levels of education and civil servants.
- The education of civil workers at the formal and informal levels should be developed in the direction of strengthening environmental values and the values of sustainable development, form a holistic view of current environmental issues, improve their competence in relation to environmental legislation, their rights, obligations and financial opportunities.
- According to experts, projects of continuing education of civil society organizations should be more sustainable, include adequate monitoring and evaluation of effectiveness, and not be limited to formal reporting without taking into account the long-term impact of projects. This may also be relevant for all countries in the region.

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## **Conclusions**

From the point of view of general conditions, despite the creation in Moldova of a legislative framework for the development of environmental education that meets modern standards (including the inclusion of environmental education in the Environmental Strategy for 2014-2023), the efforts of the executive bodies for the effective implementation of the goals set are not enough. Experts cite

the lack of financial resources and personnel as barriers, as well as the poor quality of governance and corruption that characterized public policy before the change in political course in 2019. According to experts, the problem of dependence of environmental education for sustainable development on donor support remains relevant. To advance the agenda of environmental education and education for sustainable development, it is important to create organizational centers with the participation of higher education institutions (to develop the potential of the Environmental College, etc.) and create networks to unite the efforts of government bodies, educational institutions and civil society organizations.

A positive prerequisite for the effectiveness of environmental education at the level of **preschool institutions** is a very significant coverage of preschool children with educational services. Moldovan legislation does not place a special emphasis on the development of environmental education in preschool institutions. Separate projects are being carried out with preschool institutions to introduce the environmental agenda, but they are not very actively involved. At the same time, according to experts, the programs of preschool institutions can be more flexible to introduce elements of environmental education.

Despite concrete steps to introduce environmental **education in schools**, primarily in the format of electives, according to experts, the approach needs to be adjusted. Specialists from environmental organizations and representatives of the teaching community draw attention to the fact that environmental studies within the framework of a specialized elective and traditional courses of the program need their own approach, practical orientation and education of both the values and skills of an eco-friendly lifestyle. To solve this problem, the approach to teaching environmental topics within the subjects of the program should be more systematic, and methods should differ from traditional methods of teaching natural sciences. Schoolchildren need to form a systemic worldview, an idea of the inseparability of all aspects of human life with environmental issues and the internal interconnections of all aspects of the functioning of the environment. The proportion of practical training should be increased, and the topics of courses and training materials should be balanced and cover all current environmental problems. To do this, it is necessary to provide specialized training for teachers on environmental topics, increase the practical orientation of classes and revise approaches to practical classes so that their content meets the current needs of modern environmental education (courses for teachers are laid down in the Environmental Strategy for 2014-2023, their preparation is planned for 2023).

The problems of **higher environmental education**, according to experts, are associated, among other things, with the low prestige of the ecologist profession and the low quality of training. Often there is a situation that applicants choose environmental specialties on a residual basis, in order to simply receive a diploma of higher education. In the labor market, environmentalists are in demand in environmental inspections, laboratories, and meteorological services. Working in their specialty, graduates do not preserve the values of environmental protection and protection, they do not see the impact of their work on its condition. To solve this problem, according to experts, it is important to develop environmental values and attitudes among teachers and students of environmental specialties, as well as to form a professional community, which can be solved through additional education and advanced training programs for both students and teachers. This strategy may be relevant for other countries in the region under consideration.

**Continuing environmental education** in Moldova has room for development. Strengthening this component can be facilitated by the creation of specialized institutions for advanced training and retraining of workers in environmental specialties, the introduction of programs for the systematic environmental training of teachers at all levels of education and civil servants. In addition, the education of civil servants at the formal and informal levels should be developed in the direction of strengthening environmental values and the values of sustainable development, forming a holistic view of current environmental problems, increasing competencies in relation to environmental legislation, their rights, obligations and financial opportunities. According to experts, projects of additional education of civil society organizations should be more sustainable, include adequate monitoring and evaluation of effectiveness, and not be limited to formal reporting without taking into account the long-term impact of projects. This may also be relevant for all countries in the region.

# Ukraine

## General framework for the development of environmental education

As part of the analysis of environmental education in Ukraine, it is impossible not to start with the destructive effect on all spheres of public life that Russia's war on the territory of Ukraine has. In addition to the obvious terrible consequences of the war - the death of children, youth and adults, the humanitarian crisis in many regions, the destruction of infrastructure - the displacement of the population has a very significant impact on the education sector. According to the authors of the report "[Ukraine: Benefits and Challenges in the Implementation of the UNECE Strategy for Education for Sustainable Development](#)", by the end of May 2022, 100 Ukrainian schools were destroyed, 1.5 thousand schools were damaged. The number of refugees reached 5.6 million, displaced persons - 8 million. To overcome the challenges of war, online learning was resumed in 15 regions, 3 million children switched to distance learning in schools. The war poses many threats to the country's ecology, however, in the context of the destruction of the economy and the reorientation of financial assistance towards solving humanitarian problems, it is difficult to expect sufficient funding for environmental education.

However, despite the military conflict, the Ukrainian side continues to participate in international initiatives to develop environmental education. Among them are the Aarhus Convention ([UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters](#), ratified in 1998), the UNECE Strategy «Education for Sustainable Development»: despite the war, the Ukrainian delegation participates in the meetings of the UNECE Steering Committee on Education for Sustainable Development (last meeting - May 30-31, 2022) and presents the results of the country work.

In addition, an important condition for the development of environmental education can be called the gradual harmonization of Ukrainian environmental legislation with EU law standards in accordance with the EU Association Agreement with Ukraine adopted in 2014, and [environmental reform in Ukraine](#), which includes the fulfillment of the requirements for this harmonization and bringing Ukrainian legislation in line with the requirements of the United Nations Framework Convention on Climate Change and the Paris Agreement.

The national legislation of Ukraine takes into account the need to develop environmental education. A detailed description of the legislative support for this

direction is contained in [the VI National Communication of Ukraine on climate change \(2012\)](#) and [the report on the implementation of the Aarhus Convention by Ukraine in 2017–2022](#). (2021).

According to the report, modern environmental education is a systemic component of the national education system of Ukraine, which operates on the basis of the current legislation on education (the state policy in the field of education is determined by the Supreme Council of Ukraine in accordance with the Constitution of Ukraine, the Laws of Ukraine “On Education”, “On General Secondary education”, “On pre-school education”, “On out-of-school education”, “On vocational education”, “On higher education”) and the National Strategy for the Development of Education in Ukraine for the period up to 2021, approved by the Decree of the President of Ukraine dated 25.06.2013. The legal framework for fulfilling the requirements of the Aarhus Convention includes the Law of Ukraine “On Environmental Protection”, the Law of Ukraine “On State Ecological Expertise”, the Decree of the Verkhovna Rada of Ukraine “On informing the public on environmental issues” dated 04.11.2004 No. 2169-IV and others.

In these documents, for the education system the goal is set as forming a new type of worldview, in the center of which is the humanistic-rational relationship of man with the environment in the system «nature - man - society». In Ukraine, the first among the countries of Central and Eastern Europe, the [«Concept of environmental education in Ukraine»](#) was adopted, approved by the collegium of the Ministry of Education and Science of Ukraine on December 20, 2001. In accordance with this Concept, the main goal of environmental education in Ukraine was proclaimed the formation of an ecological culture of individual citizens and society as a whole, the formation of environmental skills and worldview. They include the formation of ecological knowledge and thinking, which are based on the attitude towards the natural environment as a universal and unique value, the dependence of the fate of an individual and humanity as a whole on the state of the Earth’s biosphere, its individual components, including the earth’s climate. The concept of environmental education and upbringing set tasks in the field of both formal and non-formal education and upbringing as a continuous process throughout a person’s life.

At the same time, the Concept has a framework character and does not contain specific measures and projects for the development of environmental education. In accordance with the Concept, preschool education is the very first level, where the task is to develop basic environmental skills and feel like a part of the surrounding nature, but family education plays the main role there, so the Concept does not involve significant efforts to develop environmental education in preschool institutions. The most important stage of continuous environmental education is called general secondary education, during which the process of ecological worldview continues and deepens,

taking into account the age of children, the volume and level of their school knowledge in primary (grades 1–4), basic (grades 5–9) and senior (grades 10–12) levels. Secondary vocational environmental education should be based on the content, forms and methods of school environmental education and take into account the specifics of the impact on the environment of specific sectors of the national economy. Higher environmental education, on the one hand, is aimed at completing the formation of the environmental culture of specialists in various specialties, and, on the other hand, provides training for specialists with specialized higher environmental education of four levels (initial, basic and two levels of complete higher environmental education), which differ according to the degree of depth, thoroughness and specifics of the training of specialists. Postgraduate environmental education ensures the continuity of environmental education and includes a system of advanced training and retraining of civil servants, managers of enterprises, organizations, institutions, entrepreneurs in various aspects of environmental protection and rational use of natural resources, environmental education of adults in accordance with the needs of the individual in the labor market, as well as the training of environmental specialists of the highest qualification - candidates and doctors of science in the field of ecology and environmental protection on the basis of leading universities. In terms of non-formal education, the Concept assumes the adoption of programs and the development of projects in each region (and in each industry) separately.

Thus, from the point of view of Ukrainian legislation, modern environmental education is a continuous complex process of the formation of an environmental outlook, environmental consciousness and culture of all segments of the population, social groups and society as a whole. Fundamentals of environmental knowledge should be taught in almost all educational institutions in Ukraine.

A significant feature of the development of environmental education in Ukraine can be considered the active cooperation of the Ministry of Education and Science of Ukraine with foreign governmental and non-governmental organizations, programs and funds. The most significant international organizations with which the MES cooperates in order to implement the goals of sustainable development are the UNDP, the British Council and the US Agency for International Development. In addition, according to the [VI National Communication of Ukraine on Climate Change](#), joint projects in the field of education were implemented with the European Union, the European Education Foundation, the Council of Europe, UNESCO, the US News Agency, the Peace Corps, Airex, the German Academic Exchange Service (DAAD), Fulbright Foundation, Renaissance Foundation, French Cultural Center, German Cultural Center, Carl Duisberg Society, Canadian International Development Agency, Tempus, Edmund Muskie, Freedom Support Act, School Exchanges, AXELZ and etc.

In addition to international documents and national legislation, numerous projects on the basis of international cooperation, the activities of specialized

environmental education organizations and structures, as well as environmental NGOs that implement or have implemented their projects in the direction of educating the population, are aimed at the development of environmental education.

- Since 2003, to gain access to environmental information, provide education and public awareness, the Aarhus Information Center has been operating, established as part of the Ukrainian-Danish project «Assistance to Ukraine in the production of the Aarhus Convention». The Center constantly carries out activities to promote public access to environmental information, as well as public participation in the adoption of important environmental decisions, conducts environmental education activities to promote sustainable development, environmental protection and environmental safety. The Center provides information and methodological assistance in disseminating the results of environmental educational projects, training courses on sustainable consumption and a healthy lifestyle among children, youth and adults, in cooperation with NGOs and scientific and educational institutions provides a permanent exhibition of environmental educational and informational and methodological literature for dissemination to the public, government agencies, businesses and non-governmental organizations.
- On the basis of the State Ecological Academy of Postgraduate Education and Management, [the Intersectoral Coordination Center for Environmental Education for Sustainable Development operates](#), coordinating its work with the Department of Education Methodology for Sustainable Development, the Department of Public Administration for Sustainable Development and Environmental Standardization and the Department of Green Economy. The partners of the Center are environmental education departments in the territories of the natural reserve fund of the Ministry of Natural Resources, the National Agency of Ukraine for Civil Service, the Association of Regional and District Councils, local authorities, the National Academy of Agrarian Sciences of Ukraine, the University of Education Management of the National Academy of Pedagogical Sciences of Ukraine, public environmental organizations.
- The Academy is also a co-organizer of the partnership network [«Environmental Education for Sustainable Development in Ukraine»](#). The ESD network unites more than [450 participants](#), including public

organizations, about 50 schools, higher educational institutions, government authorities, national natural parks and other participants.

- In 2015, the project «Education for Sustainable Development in Action» was completed in Ukraine, which was implemented by the NGO «Teachers for Democracy and Partnership» together with the Swedish organization «Global Action Plan» (GAP) with the support of the Agency for International Development SIDA and the National Academy Pedagogical Sciences of Ukraine. The main results of the project were the introduction of the training courses «Lessons for sustainable development» into the system of pre-school and secondary school education.
- In 2014, a project was launched to develop the «Green Classroom» industry standard, aimed at integrating the principles of sustainable development into the academic and educational process, into socio-economic relations and the procurement process, professional training and advanced training of teachers and teachers for the SDGs, development of students' competencies and their parents on sustainable consumption. However, the standard was not widely adopted; by 2018, [about 30 institutions of preschool](#), school and higher education were working on the implementation of the standard.
- The School Project on Application of Resources and Energy (SPARE) operates in Ukraine, the national coordinator is the Eremurus Ecological Club. Only 28 organizations (postgraduate institutes, schools and NGOs) are participating in the project.
- Consideration of the general framework for the development of environmental education in Ukraine allows us to draw the following conclusions:
  - Despite the destructive impact of the war, Ukraine continues to fulfill, as far as possible, its obligations under international treaties towards the development of environmental education.
  - The country has created conditions for improving the quality of legislative regulation of the sphere of dissemination of environmental information, including through harmonization with EU legislation.
  - International cooperation is very developed in Ukraine, the country is open

to various programs, actively uses donor funding for the implementation of environmental education projects. There is a developed network of NGOs in the country, including environmental NGOs at the regional level.

- The advantage is the presence of a specialized educational center - the State Ecological Academy of Postgraduate Education and Management with specialized departments for sustainable development, whose work in this direction is carried out more actively than in other countries of the region.
- The country has examples of the practical implementation of the principles of sustainable development in the activities of educational institutions (the “Green Class” standard), which is qualitatively different from eco-educational activities of a theoretical and entertaining nature.

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## Preschool education

Ukraine has a developed network of preschool educational institutions. [According to the data for 2020, the coverage](#) of preschool education for children aged 3-5 in urban areas reached 87%, but for rural areas this figure was only 56%. To increase children’s access to pre-school education, programs were [developed at the state level](#) to encourage the development of private kindergartens. In [June 2022](#), pre-school educational institutions continued to operate in 20 regions of Ukraine, in which 4,800 internally displaced children studied. However, more than 3,000 kindergartens are forced to use an element of distance learning.

There is a legislative framework for environmental education within preschool institutions. As mentioned above, pre-school education is considered as one of the stages in the «Concept of continuous environmental education». The Law on Preschool Education (2001) also contains an article on environmental education. At the same time, the [Basic Component of Preschool Education](#), which is the State Standard for Preschool Education in Ukraine, was approved in January 2021. Changes to the standard were aimed at introducing a competency-based approach, value orientation in education and ensuring continuity between preschool education and primary school. One of the 7 invariant educational directions of the component is «Child in the natural environment».

Among the knowledge formed within the direction, along with general ideas about animate and inanimate nature, knowledge about the positive and negative impact on nature, environmental problems, climate change, the need to save resources (energy, water) and waste sorting is mentioned. The direction singles out skills related to sustainable development, describes target knowledge, emotional and value attitudes, skills, among which are responsible social behavior and understanding one's own role in saving resources and protecting the environment. This direction, in accordance with the basic component, involves, along with the efforts of the educational institution, the participation of parents. In addition to the formation of environmental competencies in the child, the document provides that parents should form environmental consciousness by their own example of a responsible, reasonable and respectful attitude towards the environment.

In addition to formal legislative grounds, one of the components of the above-mentioned project «Education for sustainable development in action» was directed to the development of environmental education for preschoolers. Within the framework of the project, a unique program of its kind «For preschoolers - education for sustainable development» was developed. And according to [the National Report on the implementation of the Aarhus Convention](#) by 2016, more than 600 kindergartens from different regions of Ukraine have already been trained under this program.

**Consideration of environmental education in preschool institutions in Ukraine allows us to draw the following conclusions:**

- A negative impact on the effectiveness of environmental education in preschool institutions can be provided by insufficient coverage of preschoolers with educational services, as well as the lack of a clear vision of the role of preschool education in the «Concept of environmental education in Ukraine».
- A significant factor in the development was the program “Education for Sustainable Development for Preschoolers», which covered a large number of preschool institutions; this experience should be adopted by the countries of the region.

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## General secondary education

The development of environmental education in secondary schools in Ukraine has a legislative basis. General secondary education is the most important stage of

lifelong environmental education in accordance with the Concept of Environmental Education in Ukraine. The Law “On General Secondary Education” (1999) considers environmental education in educational institutions as one of the priority disciplines. According to [the report on the implementation of the Aarhus Convention by Ukraine](#) for 2007, the reform of primary and secondary education in 2001 was accompanied by the introduction of new curricula and educational standards in the field of environmental protection. This approach consisted of integrating environmental issues into other disciplines. As a result, environmental education is part of the subject “I and Ukraine” which is taught in grades 1-4, and a number of subjects studied in grades 6-12, including biology, physics, geography, literature and some other disciplines. Natural history is taught in grades 5 and 6. In addition, environmental issues are included in the Fundamentals of Health, which is taught in all grades. Among the optional subjects for grades 10 and 11 the subject «Fundamentals of environmental knowledge» is included. The preparation of textbooks and teaching aids is supervised by the Institute of Educational Problems of the Ukrainian Academy of Pedagogical Sciences.

The activities of the partnership network «Environmental Education for Sustainable Development in Ukraine» are aimed at introducing ecological optics into school education programs. Among the results of its work [are the introduction](#) of an interdisciplinary approach with the inclusion of environmental issues in the educational programs of grades 5–9 in all subjects. At the time of 2018, representatives of the network noted that in order to achieve these goals, the development of relevant methodological materials and manuals had begun.

In addition to compulsory subjects, the Minor Academy of Sciences and the Ukrainian State Environmental and Natural History Center encourage extra-curricular environmental education among children and youth. There are about 200 centers for young naturalists in the country. As reported in the [VI National Communication of Ukraine on Climate Change](#) (2012), in 2009, on the initiative of the OSCE, a school educational and methodological complex «Green Package» for Ukraine was developed, in 2010 it was approved by the Ministry of Education and Science of Ukraine . A separate topic of this complex is «Climate change in conjunction with other aspects of the conservation of the Earth’s biosphere and environmental protection.»

UN agencies played an active role in developing the environmental orientation of secondary education. As of 2012, there were 12 UNESCO Chairs and 55 UNESCO Associated Schools in Ukraine. It is also worth noting the project «Educational Policy and Peer Education», implemented with the support of the United Nations Development Program (UNDP). The goal of the project was to contribute to the continuous development of society by improving the quality of education and creating a democratic educational space. The project included two components: education policy (education

management, education content, education quality monitoring) and peer education. Another example of cooperation in this context is the implementation of the project of the Ministry of Education and Science and the World Bank «Equal Access to Quality Education in Ukraine», which contributed to ensuring equal access to school education for students in urban and rural areas, improving the conditions for teaching and learning relevant programs.

The courses “Lessons for sustainable development”, developed within the framework of the mentioned project “Education for sustainable development in action”, as of 2016, covered more than 900 schools in 14 regions of Ukraine, 2800 teachers, more than 100 thousand students and their members’ families.

Schoolchildren participate in a large number of actions and competitions, including those of a nature conservation nature; many educational events are held in educational institutions of the organizations of the reserve fund.

### **Consideration of the general framework for the development of environmental education in secondary schools in Ukraine allows us to draw the following conclusions:**

- Positive characteristics of the development of environmental education in schools are interdisciplinary approaches and the introduction of environmental topics not only in specialized courses, but also in programs of other subjects.
- It is also worth noting the openness of schools to international cooperation and world experience, the significant contribution of the project «Education for sustainable development in action».

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## **Vocational education**

Speaking about environmental education in higher education, experts consider it necessary to mention the training of environmental specialists, as well as environmental courses in the preparation of students in other specialties.

Since the early 2000s, higher environmental education in Ukraine began to develop very actively. The [VI National Communication of Ukraine on Climate Change](#) (2012) notes the main milestones in this development. According to the Decree of the Cabinet of Ministers of Ukraine dated May 24, 1997 No. 507 “On the list of areas

and specialties in which specialists are trained in higher educational institutions at the relevant educational and qualification levels”, training in the direction of “Ecology” is carried out at the educational and qualification levels of the junior specialist, bachelor, specialist, master. This ensures the beginning of professional environmental training in Ukraine from the level of secondary specialized educational institutions. According to the Decree of the Cabinet of Ministers of Ukraine dated 13.12.2006 No. 1719 “On the list of areas in which specialists are trained in higher educational institutions at the educational and qualification level of a bachelor”, the name of the area of training was changed to “Ecology, environmental protection and balanced nature management”. Order No. 487 dated June 15, 2004 approved the components of the industry standard of higher education (ISHE) - educational and qualification characteristics (EQC), educational and professional program (EPP) for training a specialist of the educational and qualification level of a bachelor in the direction of training «Ecology». New environmental curricula such as Environmental Auditing, Environmental Economics, Recreational Ecology and Fundamentals of Sustainable Development have been created.

In 2001, the Odessa State Ecological University was established, which is a specialized educational institution for the training of environmental specialists. This university plays a significant role in the development of environmental education in general and climatological training in particular. It should be noted the close cooperation between the Odessa State Ecological University and other specialized universities in the region: joint projects were implemented with the Moscow State University named after M. Lomonosov and the International Sakharov Environmental Institute (Minsk, Belarus). Scientists and teachers of the Odessa State Environmental University also took part in the international European project «AISHE 2.0 Project» to develop tools for the qualitative assessment of education programs for sustainable development, primarily in higher education. In addition to it, 6 more universities and 2 colleges are listed as members of the partner network [«Environmental Education for Sustainable Development in Ukraine»](#).

An important contribution of universities to the development of environmental education can be considered the teaching of the course «Methods of teaching environmental subjects» at pedagogical universities, as well as the training of environmental teachers at Chernihiv and Uman universities.

The number of universities that train environmental specialists increased from 30 in the early 2000s [to 111](#). About 2,000 environmental specialists graduate annually, and in fact, fears are already being expressed that the required number of such specialists in the country will be exceeded. However, according to experts, the specialty is not attractive to applicants, and the profession of an ecologist is not prestigious.

According to the report on [the implementation of the Aarhus Convention by Ukraine](#) for 2007, general education courses on ecology are included in the programs of

both vocational and secondary and higher educational institutions (a new compulsory course «Fundamentals of Ecology» is included in the programs of vocational schools and technical schools, in all higher educational institutions, a general education course «Ecology» was introduced).

**Based on the results of the assessment of environmental education at the level of vocational education in Ukraine, the following conclusions can be drawn:**

- From a formal point of view, professional environmental education in Ukraine is very well developed, there are specialized educational institutions at the level of secondary specialized education, a large number of universities train environmental specialists.
- The advantage of the «Concept of Environmental Education in Ukraine» is that it also mentions the development of environmental consciousness of students of non-environmental specialties.
- A negative condition for the development of professional environmental education is that the prestige of the specialty among applicants is not very high, the level of demand for specialists in the existing system is low, and in order to increase the requirements for specialists, it is necessary to continue the environmental reform of the country's economy.

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## Continuing education

The country's «Concept of environmental education» involves the development of both formal and non-formal environmental education in Ukraine, so continuing education is an important part of environmental education for children and adults.

The history of the development of advanced training for environmental specialists in independent Ukraine begins with the creation of the State Institute for Advanced Studies and Retraining of Personnel of the Ministry of Ecology and Natural Resources of Ukraine in 1992. In 2004, it was reorganized into the State Ecological Institute of the Ministry of Environmental Protection. As noted in [the report on the implementation of the Aarhus Convention by Ukraine](#) for 2007, at that time, retraining was carried out mainly by employees of the State Ecological Inspectorate, the customs service and large polluting enterprises. Also, the Institute annually provided training for

about 50 graduate students in the specialty «Ecology» and 25 graduate students in the specialty «Management of environmental protection.» However, by that time, no state body had been assigned a clear obligation to promote non-formal and non-formal adult education. However, the MEP received funding from the State Fund for Environmental Protection to hold meetings and conferences to raise awareness of environmental issues and publish relevant information materials for the general public. In 2008, on the basis of the institute, the State Ecological Academy of Postgraduate Education and Management was established.

In pursuance of the Aarhus Convention, the State Ecological Academy of Postgraduate Education and Management carries out retraining and advanced training of specialists (specialty 070801 - «Ecology and Environmental Protection in the direction 0708 - Ecology»), research and information and educational work on topical issues of environmental protection, ensuring rational use of natural resources and environmental safety. The Academy has a master's program in the specialties «Ecology» (specializations «Ecology and environmental protection», «Environmental safety in the areas of production» and «Land management and greening of land use») and «Environmental protection technologies». The Academy also trains postgraduate students in the specialties «Economics of nature management and environmental protection», «Ecology» and «Environmental protection technologies». In addition, a doctoral program in the specialty «Environmental Protection Technologies» has been opened.

The Academy has a center for scientific and environmental information, an intersectoral coordinating center for environmental education for sustainable development, an information and educational Aarhus center, an industry training center on labor protection, a center for European and Euro-Atlantic integration and a center for digitalization of educational and scientific activities; Thus, the Academy is a driving force not only for advanced training, but also for the development of environmental education at all levels, which is manifested in the active participation of the Academy in many international and local projects.

If we talk about non-formal education, public organizations play an important role in it. According to the National Report on the implementation of the Aarhus Convention for the period 2014-2016, among the leading public organizations carrying out extensive environmental education and educational activities, one can name the International Charitable Organization «Ecology-Law-Man» (ELM), the International Charitable Organization «Information Center» Green Dossier «», All-Ukrainian Public Association «Mama-86 », All-Ukrainian Public Organization «National Ecological Center of Ukraine», All-Ukrainian Public Association «Living Planet», Resource and Analytical Center «Society and Environment», Kyiv Ecological and Cultural Center, Center for Resource Efficient and Cleaner Production in Ukraine, public organization «Ecological Club «Kray».

A significant contribution to the informal environmental education is provided by projects under the Small Grants Program of the Global Environment Facility SGP GEF. According to the partner network «Environmental Education for Sustainable Development in Ukraine», at the end of 2021, as part of the program, 5 youth projects on the topic of environmental education were implemented in 7 regions, in which more than 1.5 thousand participants took part. The program supported the development of online courses for the general public on «green» entrepreneurship, the basics of sustainable development and sustainable development of communities, and environmental pollution.

In addition, within the framework of the already mentioned project “Education for Sustainable Development in Action”, an educational program for adults “Sustainable Household” was implemented, which covered more than 1,400 families (more than 4.5 thousand people) in the Ivano-Frankivsk region.

### **Consideration of environmental education in the form of additional education in Ukraine allows us to draw the following conclusions:**

- The active development of additional environmental education is due to the productive work of the State Ecological Academy of Postgraduate Education and Management, the partner network «Environmental Education for Sustainable Development in Ukraine», the development of civil society at the national and local levels, as well as the attraction of international funding for environmental education projects.
- A valuable experience for development in other countries of the region to increase the sustainability of environmental education projects is the existence of the State Fund for Environmental Protection.

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## **Conclusions**

To characterize **the general framework for the development of environmental education**, it is worth noting that despite the destructive impact of the war, Ukraine continues to fulfill, as far as possible, its obligations under international treaties in the direction of environmental protection and environmental education. The country has created conditions for improving the quality of legislative regulation of the sphere of dissemination of environmental information, including through harmonization with EU legislation. International

cooperation is very developed in Ukraine, the country is open to various programs, actively uses donor funding for the implementation of environmental education projects. The country has a developed network of NGOs, including environmental NGOs at the regional level. The advantage is the presence of a specialized educational center - the State Ecological Academy of Postgraduate Education and Management with specialized departments for sustainable development, whose work in this direction is carried out more actively than in other countries of the region. The country has examples of the practical implementation of the principles of sustainable development in the activities of educational institutions (the "Green Class" standard), which is qualitatively different from eco-educational activities of a theoretical and entertaining nature.

If we talk about the general prerequisites for the development of environmental education at **the preschool level**, in addition to the devastating consequences of the war, the insufficient coverage of preschool children with educational services, as well as the lack of a clear vision of the role of preschool education in the Concept of environmental education in Ukraine, could have a negative impact. A significant factor in the development was the program «Education for Sustainable Development for Preschoolers», which covered a large number of preschool institutions; this experience should be adopted by the countries of the region.

Positive characteristics of the development of environmental **education in schools** are an interdisciplinary approach and the introduction of environmental topics not only in specialized courses, but also in programs of other subjects. It is also worth noting the openness of schools to international cooperation and world experience, the significant contribution of the project «Education for sustainable development in action».

From a formal point of view, **vocational environmental education** in Ukraine is very well developed, there are specialized educational institutions at the level of secondary specialized education, a large number of universities train environmental specialists. The advantage of the Concept of Environmental Education in Ukraine is that it also mentions the development of environmental consciousness of students of non-environmental specialties. A negative condition for the development of professional environmental education is that the prestige of the specialty among applicants is not very high, the level of demand for specialists in the existing system is low, and in order to increase the requirements for specialists, it is necessary to continue the environmental reform of the country's economy.

The active development of **continuing environmental education** is due to the productive work of the State Ecological Academy of Postgraduate Education and Management, the partner network «Environmental Education for Sustainable Development in Ukraine», the development of civil society at the national and local levels, as well as the attraction of international funding for environmental education projects. A valuable experience for development in other countries of the region to increase the sustainability of environmental education projects is the existence of the State Fund for Environmental Protection.

# General conclusions and recommendations

From the point of view of the international context of environmental education development we can say that all the considered countries of the region were (until Belarus withdrew from the Aarhus Convention in July 2022) parties to the key international treaties in this area - the Aarhus Convention and the UNECE Strategy on Education for Sustainable Development. However, Belarus and Ukraine were more actively involved in the fulfillment of their obligations and the development of these initiatives, for Armenia and Moldova, a more active involvement in the work in these areas could be useful. The advantage of the situation in Armenia, Moldova and Ukraine is the obligation to harmonize environmental legislation with EU legislation. In the future, this will be able to positively influence the interest in environmental issues on the part of civil servants, increase the demand for environmental specialists and the quality of their training, and also increase the prestige of the profession.

If we talk about **national legislation**, its analysis shows a positive impact on the development of environmental education. The presence of a common document that places environmental education in the context of an environmental protection strategy or an education system development strategy (for example, the Concept of Lifelong Education in Belarus, the Concepts of Environmental Education in Ukraine, the Environmental Strategy for 2014–2023 in Moldova). To maximize the effectiveness of the adoption of such documents, it is important that they be guided by the formation of state policy in the format of socio-economic development programs that contain specific plans, activities, budgets and indicators of the implementation of strategies. In terms of content, such documents should contain clear guidelines for the introduction of environmental education for sustainable development at all stages, namely, preschool, secondary, and professional at different levels, both among environmental students of other specialties.

To increase the effectiveness of the development of environmental education, a centralized approach to the dissemination of practices and administrative resources, which are typical for the Belarusian education system, can be useful. The synergy of state and non-state organizations can also be useful, in particular in the format of network formations and associations that unite the efforts of state bodies, educational institutions and NGOs. Examples of such network organizations can be the (currently liquidated) «Association of Education for Sustainable Development» from Belarus and the partner network «Environmental Education for Sustainable Development in Ukraine».

**Examples of projects** and initiatives that gave a noticeable impetus to the development of environmental education include the Green School initiative (presented in Belarus and Ukraine), the Ukrainian project Education for Sustainable Development in Action, the use of the SGP GEF small grants program in projects to develop environmental education.

If we talk about financing programs for the development of environmental education, in all countries of the region they use donor assistance, which may reduce their sustainability in the future. The solution to the problem of dependence on donor assistance can be the development of national funds (examples can be the State Fund for Environmental Protection of Ukraine, the National Environmental Fund of Moldova), as well as the involvement of national businesses and CSR programs, which are practically not mentioned in connection with environmental education projects in the surveyed countries of the region.

For the development of environmental education in **preschool institutions**, it is important to take into account that they, as a rule, have more flexible lesson programs than in schools, teachers are less loaded with paperwork, preschool institutions also have better contact with children's families, which means that there is an opportunity to involve the local community. But in addition to the development of supporting materials for environmental activities, which are not enough for preschool institutions, to support environmental education at the preschool level, it is necessary to develop environmental practices in the activities of the institutions themselves, as well as allow more flexible approaches without unnecessary organizational obstacles for organizing additional classes and circles. According to experts, work with preschoolers can be carried out in the format of creative activities (songs, theatrical performances on environmental topics).

In all countries of the region, the main focus for the development of environmental education is on **general secondary education**, however, there are a number of common difficulties for this: a large workload of teachers, a large number of mandatory planned extracurricular activities (participation in competitions, preparation of projects, etc.). The effectiveness of the work is highly dependent on the availability of motivated, involved teachers and is not ensured on a systematic basis, the limitations of financial and human resources are felt. It is very important to take into account that environmental studies within the framework of a specialized elective and traditional courses need their own approach, practical orientation and education of both the values and skills of an eco-friendly lifestyle. To solve this problem, the approach to teaching environmental topics within the subjects of the program should be more systematic, and methods should differ from traditional methods of teaching natural sciences. Schoolchildren need to form an idea of the inseparability of all aspects of human life with environmental issues and the internal relationships of all aspects of the functioning

of the environment. The proportion of practical training should be increased, and the topics of courses and training materials should be balanced and cover all current environmental problems. To do this, it is necessary to provide specialized training for teachers on environmental topics, increase the practical orientation of classes and revise approaches to practical classes so that their content meets the current needs of modern environmental education. As one of the ways to introduce environmental issues into the school curriculum, you can use elements of environmental projects in STEM education programs, the development of which is supported in educational institutions. For optional classes in ecology, you can consider the resource of classroom hours and extended day groups for younger students.

At the level of **vocational education** it is necessary to introduce environmental issues into non-specialized general education courses, for this it is necessary to improve the qualifications of teachers in secondary and higher educational institutions. Among students of environmental specialties, it is important to maintain a systemic worldview and cultivate environmental values; it is also possible to direct efforts to form and maintain a professional community of environmental students and graduates to increase the efficiency of their professional activities and disseminate the values of the profession. For the development of environmental education at all levels, it seems effective to create specialized centers for the development and promotion of environmental education on the basis of specialized universities.

In the field of **continuing education**, a significant role can be played by specialized environmental institutions for retraining and advanced training (for example, the Republican Center for State Environmental Expertise and Advanced Training of Managers and Specialists in Belarus, the State Environmental Academy of Postgraduate Education and Management in Ukraine). The audience of the courses should be expanded to include representatives of local executive authorities, preschool and school teachers and university professors. In addition to specialized knowledge, they need to instill a broad vision of environmental issues, values, a sustainable development perspective, as well as form and support a community of interested professionals. For continuing education projects implemented by NGOs, it is important to provide for an adequate assessment of their effectiveness, increase sustainability by diversifying funding sources, supporting a community of interested education professionals, and cooperating with government agencies to scale best practices.

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