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### **Abstract**

This thesis examines Environmental Education in Ukraine, its transformation in connection with the current global agenda, and methodological aspects from the perspectives of formal and non-formal education. The reform of educational policy in Ukraine is accompanied by fundamental changes in the content of training and education of the younger generation and the development of more effective pedagogical approaches. In the context of deepening the European integration process, one of the most pressing problems is the optimization of the forms of interaction between society and nature by increasing the young generation's environmentally friendly culture. Environmental education should enable an individual to find a balance between his or her life needs and the environment. Environmental education includes formal and non-formal education, which increases environmental awareness and the ability to think critically and seek solutions to global challenges.

Modern environmental education in Ukraine is not a well-researched topic in scientific circles. The purpose of the thesis is to determine the main trends and changes in this area to fill the research gap. New reforms in educational policy and laws related to the development of environmental education in Ukraine were studied in the process of writing this thesis. Expert interviews were used as the primary research method to obtain information that is not freely available. The results of nine interviews with representatives of formal (principals) and non-formal (NGOs and companies) environmental education revealed the goals of their activities in this area, approaches and methods used in the educational process, the challenges that the participants in the process face, as well as the strengths and weaknesses of both forms of education. This study has shown that the education system has changed in recent years and continues to change due to the «New Ukrainian School» reform. Due to decentralization, the schools received a higher degree of autonomy, though lack of funding, government support, and retraining of teachers following the agenda remain urgent problems. These factors have a direct impact on environmental education in Ukrainian general secondary schools.

**Keywords: environmental education, environmental competence, environmental awareness, sustainable development, eco-culture, ecology, formal and non-formal education, general secondary education**

## Zusammenfassung

Diese Arbeit untersucht die Umwelterziehung in der Ukraine, ihre Transformation im Zusammenhang mit der aktuellen globalen Agenda und methodische Aspekte aus der Perspektive der formalen und nicht-formalen Bildung. Die Reform der Bildungspolitik in der Ukraine geht mit grundlegenden Änderungen des Inhalts der Aus- und Weiterbildung der jüngeren Generation und der Entwicklung wirksamerer pädagogischer Ansätze einher. Im Zusammenhang mit der Vertiefung des europäischen Integrationsprozesses ist eines der dringlichsten Probleme die Optimierung der Formen der Interaktion zwischen Gesellschaft und Natur durch die Förderung einer umweltfreundlichen Kultur der jungen Generation. Umweltbildung sollte es einem Menschen ermöglichen, ein Gleichgewicht zwischen seinen Lebensbedürfnissen und der Umwelt zu finden. Sie umfasst formale und nicht formale Bildung, die das Umweltbewusstsein und die Fähigkeit erhöht, kritisch zu denken und Lösungen für globale Herausforderungen zu suchen.

Moderne Umwelterziehung in der Ukraine ist in wissenschaftlichen Kreisen kein gut erforschtes Thema. Der Zweck der Abstracts ist es, die wichtigsten Trends und Veränderungen in diesem Bereich zu bestimmen, um die Forschungslücke zu schließen. Während der Erstellung einer Abschlussarbeit wurden neue Reformen in der Bildungspolitik und in den Gesetzen im Zusammenhang mit der Entwicklung der Umweltbildung in der Ukraine untersucht. Das Experteninterview wurde als primäre Forschungsmethode verwendet, um Informationen zu erhalten, die nicht frei verfügbar sind. Die Ergebnisse von neun Interviews mit Vertretern der formalen (Schulleiter) und nicht formalen (NGO und Unternehmen) Umweltbildung haben die Ziele ihrer Aktivitäten in diesem Bereich gezeigt, die im Bildungsprozess verwendeten Ansätze und Methoden sowie die Herausforderungen, denen sich die Teilnehmer des Prozesses gegenübersehen, aber auch die Stärken und Schwächen beider Formen der Bildung. Diese Studie hat gezeigt, dass sich das Bildungssystem in den letzten Jahren geändert hat und sich aufgrund der Reform der «New Ukrainian School» weiter verändert. Im Zuge der Dezentralisierung erhielt die Schule größere Autonomie, obwohl der Mangel an Finanzmitteln, die staatliche Unterstützung und die Umschulung von Lehrern nach der Tagesordnung weiterhin dringende Probleme darstellen. Diese Faktoren wirken sich direkt auf die Umweltbildung in der ukrainischen allgemeinen Sekundarschule aus.

**Schlüsselwörter: Umweltbildung, Umweltkompetenz, Umweltbewusstsein, nachhaltige Entwicklung, Ökokultur, Ökologie, formale und nicht formale Bildung, allgemeine Sekundarschulbildung**

## **List of abbreviations**

CSR - Corporate Social Responsibility

EE - Environmental Education

EPR - Extended Producer Responsibility

KPI - Key Performance Indicators

MES - Ministry of Education and Science of Ukraine

MOF - Ministry of Finance of Ukraine

MSW - Management of solid household waste

NGO - Non-governmental Organization

NUS - New Ukrainian School

OECD - The Organisation for Economic Co-operation and Development

SDGs - Sustainable Development Goals

UAH - Ukrainian Hryvnia

UN - United Nations Organization

UNCE - United Nations Conference on the Environment

UNECE - United Nations Economic Commission for Europe

UNEP - United Nations Environment Programme

UNESCO - United Nations Educational, Scientific and Cultural Organization

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## CHAPTER 1 - Introduction

*Werte kann man nicht lernen, sondern nur vorleben.*

*Viktor E. Frankl*

### 1.1. Problem Statement

Over the past few decades, the environmental situation on Earth has been changing rapidly. Global problems caused by the contradictions of social development sharply increased scales of the impact of human activities on the planet and are also associated with the unevenness of socio-economic development of countries and regions. However, some developed countries' individual experience shows that it is possible to improve the environment based on the principles of the country's environmental policy. One of these principles is a high level of eco-culture of the population and active social activities.

Ukraine's current environmental situation can be described as critical one, which has been formed over a long period due to non-compliance with the laws of development and reproduction of the natural resource system. After the Chernobyl disaster in 1986, 7% of its territory is radioactively contaminated and unsuitable for life. In April 2020, inside the Chernobyl Exclusion Zone, a forest spontaneously burned for two weeks. As a result of the fires, the radiation levels inside the zone were «16 times higher than normal» [The Guardian, 06.04.2020]. Besides, the main environmental problems in Ukraine are the pollution of drinking tap water, air pollution (especially in the industrial regions of the country), the destruction of land resources (degradation of black soil of Ukraine), the destruction of green spaces, the pollution of water resources (the Black Sea, surface waters), hazardous geological work, massive emissions of household waste. According to various sources, only 3-10% of waste (domestic and industrial) is recycled in Ukraine. The remaining 90-97% of the waste is sent to natural landfills, which are more than 35,000 in number in the country. According to the National Strategy for Waste Management, adopted in 2017, the volume of solid waste in landfills should be reduced from 95% (in 2016) to 50% in 2023 and 30% in 2030. However, the pace is not real, as of 2018, the amount of waste decreased by only 1,2%. Furthermore, this is just a single example of inconsistencies between the agenda, new reforms and strategies, and their implementation in reality [Government Portal, 2017].

According to the Environmental Performance Index in 2018, Ukraine ranked as the 109th country with a score of 52,87 among 180 countries covered by the study. The top three leaders included Switzerland (87,42), France (83,95) and Denmark (81,60). The Environmental Perfor-



mance Index is a global study and its accompanying ranking of countries worldwide in terms of environmental load and rational use of natural resources [EPI Data].

Due to global environmental problems, the need arose to search for new ways to ensure sustainable development. In this regard, on the one hand, there are beliefs that the priority task of modern education is the formation of a new society, the creation of new forms of behavior and lifestyle in everyday life, which are aimed at the rational consumption of natural resources and their conservation. An environmentally conscious society should function with new values and principles, according to which environmental protection is considered as the preservation of the human race in the long term. Therefore, environmental education is one of the main tools in combating the environmental crisis.

On the other hand, fear of the future is an ineffective tool for educating a thoughtful and conscious society [Hartmeyer 2008: 3]. Therefore, in addition to environmental competence, it is necessary to develop other competencies, for example, such a skill as reflection. During an endless stream of information, the ability to see the «big picture», interdependence, and to understand direct and indirect causality and pressures is vital. Also, the individual should be able to be free to think outside the box in order to raise a creative ability and to raise critical thinking. Besides, one of the crucial competencies is the skill of learning throughout life. Environmental education should not be understood as a transfer of theoretical knowledge. However, it could be understood as a critical reflection on problems, previous successful or unsuccessful experiences, and an independent search for a solution to these problems.

The environmental education system includes awareness of the ecological environment, responsibility for preserving the environment, interest in environmental problems, knowledge, skills needed to identify them, research and solutions, understanding the value of life in all its manifestations, and practical experience to improve the environment. One of the essential steps in the formation of an environmental culture of society is environmental competence. Education is the experience of creatively using the acquired knowledge and skills with experience of an emotional and value attitude to reality and understanding the meanings, social and personal significance of environmental measures to solve environmental problems. It is an essential feature of this competence [Heckmair 2005: 244-245].

The growing amount of information and socially interpreted environmental knowledge has increased in the media and the scientific community. This information caused an increase in the population's public activity, which led to the creation of formal and non-formal environmental societies, organizations, youth movements, and foundations, etc. Civil society plays a significant role in

creating environmental awareness, as it is the initiators of many educational projects are private sector, youth organizations and NGOs. Often, the private sector is a sponsor and partner of NGOs and youth organizations. Regional and local authorities in some cities cooperate and accept the private sector's conditions; in some cities, they do not participate. In the study, it will be relevant to investigate the specifics of the partnership of such organizations and initiative parties and to consider specific current examples.

## **1.2. Purpose of the Study**

Modern environmental education in Ukraine is not a well-studied topic in scientific circles. It is going now through certain transformations and reforms and the education system in general education schools in the country entirely.

School education in Ukraine is an integral part of the sociocultural environment, to which we devote a significant part of our life (11-12 years). School education plays a crucial role in shaping the personality and upbringing of the younger generation. The importance of education in human life is growing, and therefore it cannot be limited only to the period of study. The need for a constant increase in knowledge has led to the emergence of such an interesting phenomenon in public life as a lifelong education. This process is accompanied by the search for new forms and teaching methods that contribute to the correct formation of a scientific worldview, critical thinking, and a deeper understanding of the economic and social changes that are taking place. Thus, it is crucial in such an essential period of an individual's formation to give theoretical and technical knowledge and form a system of values and skills that will accompany the student after school education.

There is a demand in society for solving environmental problems, preventing those disasters that have not yet happened, and a demand for improving the quality of life. Therefore, environmental education can play an essential role in addressing the environmental crisis and lack of awareness of current environmental problems.

This study aims to investigate the changes in the development of formal and non-formal environmental education in Ukraine, identify priority areas for the development of environmental education, and prove the need for more intensive reforms and cooperation in the context of environmental education in the country.

This research is devoted to the analysis of the current situation and transformations in the educational system in the country and education policy over the past 5-10 years, identification of key stakeholders which are involved in the environmental education process, and the analysis of

strategies and tools that are used in the environmental education process. The study's primary case is to investigate whether formal and non-formal education influences environmental awareness, attitudes, and values, to what extent one or the other affects the population's eco-culture.

### **1.3. Research Questions and Assumptions**

The study should answer the following primary research questions:

- 1) What is the state of formal and non-formal environmental education in Ukraine?
- 2) How has formal and non-formal environmental education changed in recent years (historical transformations) in Ukraine, and what are the development trends now?
- 3) Which methods, approaches and tools are used to form a worldview, environmental awareness and eco-culture of the young generation?
- 4) What are the strengths and weaknesses of formal and non-formal environmental education in Ukraine and which type of education could play a more significant role in forming environmental awareness?
- 5) Which stakeholders are involved in the process of creating conditions for environmental education in Ukraine: participation and role of the state, local and regional authorities, private sector, NGOs, youth organizations, etc.?

Based on the presented considerations on the topics covered, the following hypotheses/assumptions are also put forward:

- 1) Formal environmental education in Ukraine is a school curriculum that includes subjects on relevant topics, and non-formal environmental education is participation in environmental projects initiated by public and private organizations.
- 2) Formal environmental education is changing due to the Ministry of Education and Science reforms, and non-formal education has become more active due to the emergence of environmental activists and public and private initiative groups.
- 3) A theoretical and practical approach is used in the formation of awareness.
- 4) It is assumed that non-formal education methods can be popular with students since their approaches are as interactive as possible, which is their advantage.
- 5) The school plays the leading role in forming basic knowledge about the environment, and extracurricular contests and projects stir up interest in this topic.

#### **1.4. Structure**

After Chapter 1 has introduced the research questions and put forward related theses to provide the most informative understanding of the topic, Chapter 2 first explains and analyzes the essential terms in this work. Besides, possible theories and approaches within the framework of environmental education are considered. The specifics of school education in Ukraine and the legal regulation of environmental education in the country are described. Then Chapter 3 is introduced, which describes recruitment and sampling methods, data collection and evaluation, and their practical application. Particular attention is paid to Chapter 4, where the actual results are analyzed. Finally, the results are discussed, and the research questions are answered.

While writing the thesis, literature, and policy documents review, sources in Ukrainian, English, and German were used.

## CHAPTER 2 - Literature Review and Conceptual Framework

The goal of this literature review was to find the most appropriate definition of environmental education in modern society, to present the historical and social context for the existence and development of environmental education in the world and specifically in Ukraine, to consider legislative activities and trends in the reform of environmental education in the country, and to explore possible theories and approaches within environmental education.

### 2.1. Definitions

#### 2.1.1. *Environmental Education*

Environmental education is an educational tool that has a large number of definitions, methods and approaches. The development of the definition of «environmental education» went through many historical stages, but it gained relative popularity in the international arena only in the 70s. In 1972, the International Conference was held in Stockholm. It was a strategically important event, as it played a role in the subsequent formation of the concept of «environmental education» and eco-culture. The result of this conference was the creation of the United Nations Environment Program (UNEP). After creating the program, a series of conferences were held at which the problems of environmental education were discussed.

In the modern interpretation of the concepts «environment» and «environmental education» are often mistakenly confused with the concepts of «ecology» because of the existing concepts and words that have taken root in the modern language, for example, such as «eco-friendly lifestyle», «eco-friendly brand» or «eco-product». Sometimes their use as synonyms seems appropriate in everyday life, but what if we look at these definitions in more detail.

In general, according to the Oxford Dictionary, «eco» is a prefix derived from the Greek «oikos», meaning «house» or «dwelling place», and «ecology» is the scientific study of the interrelationships among organisms and between organisms [Oxford Dictionary of Ecology]. Longman Dictionary of Contemporary English, for instance, describes ecology as «the way in which plants, animals, and people are related to each other and to their environment» [Longman Dictionary of Contemporary English].

In turn, «environment» is the complete range of external conditions, physical and biological, in which an organism lives [Oxford Dictionary], or this is «the air, water, and land on Earth, which is affected by man's activities» by Longman Dictionary [Longman Dictionary of Contemporary English].

According to the United States Environmental Protection Agency, the definition «environmental education» means «a process that allows individuals to explore environmental issues, engage in problem-solving, and take action to improve the environment» [The United States Environmental Protection Agency]. «Environmental education is the process of giving students and the public the knowledge they need to protect the environment» [Cambridge Dictionary].

Such varied formulations only confirm that the definition of «environmental education» cannot be just a «process» or just another «form» of education. According to UNESCO publication Connect (2002), environmental education can be defined as follows: «It is not simply a tool for environmental problem-solving or management. It is an essential dimension of basic education focused on a sphere of interaction that lies at the root of personal and social development: the sphere of relationships with our environment, with our common «home of life» [UNESCO Digital Library]. While a variety of definitions of the term have been suggested, this paper will use the definition suggested by UNESCO: «Environmental education is a lifelong learning process that fosters clear awareness of, and concerns about, economic, social, political and ecological interdependence, increases people's knowledge, values, attitudes, commitment and skills needed to protect and improve the environment, and creates new patterns of behavior of individuals, groups, and society as a whole towards the environment» [UNESCO Tbilisi Declaration 1978: 3]. Besides, the categories of environmental education objectives were determined as a result of the world's first intergovernmental conference on environmental education in Tbilisi in 1977. There are five of them: awareness, knowledge, attitudes, skills, and participation [UNESCO Final Report 1977: 26-27].

### ***2.1.2. Formal and Non-formal Education***

According to the UNESCO Education Glossary, formal education is education that is «institutionalized, intentional and planned through public organizations and recognized private bodies and, in their totality, make up the formal education system of a country» [UNESCO Glossary]. It can be a long-term program or a short-term course, upon completion of which a set of statutory rights arises for a graduate who successfully passes the final examinations. For example, such rights include the right to engage in paid work in the profile of a completed course of study, the right to hold a higher position in the service hierarchy, and the right to enter educational institutions of a higher rank.

Regarding non-formal education, the defining characteristic of the UNESCO Glossary is that «it is an addition, alternative and/or a complement to formal education within the process of

the lifelong learning of individuals, (...) often provided to guarantee the right of access to education for all, (...) caters for people of all ages but does not necessarily apply a continuous pathway-structure; it may be short in duration and/or low intensity, and it is typically provided in the form of short courses, workshops or seminars.» [UNESCO Glossary]. The main feature of non-formal education is the absence of a uniform, to one degree or another, standardized requirements for learning outcomes, but non-formal learning is quite organized and may have learning goals [OECD: Recognition of Non-formal and Informal Learning]. Non-formal education can include programs that promote literacy for adults and youth, education for out-of-school children, life, and work skills aimed at social or cultural development.

The UNESCO Education Glossary mentioned above contains the following definitions: «education» is the process by which society consciously transfers from generation to generation the accumulated information, knowledge, understanding, attitude, values, skills, competencies, patterns of behavior. It involves communication engineered to provide «learning». «Learning» - individual acquisition or improvement of information, knowledge, understanding, attitudes, values, skills, competencies, patterns of behavior through experience, practice, study or instruction.

In the education bill, the norms relating to formal and non-formal education are collected mainly in article 8 [Law of Ukraine on Education]:

1) A person realizes his right to education throughout his life through formal, non-formal and informal education. The state recognizes all these types of education, supports the subjects of educational activities, providing the appropriate educational services, and encourages the acquisition of education of all types.

2) Formal education - education that is acquired by educational programs in accordance with the levels of education, branches of knowledge, specialties (professions) defined by the legislation, presupposes the achievement by the applicants of education, the learning outcomes of the corresponding level of education and obtaining qualifications, determined by the educational standards, are recognized by the state.

3) Non-formal education is education that is acquired by educational programs and does not provide for the assignment (award) of state-recognized qualifications for educational levels and obtaining a document on education established by law.

4) Informal education (self-education) is an education that provides for the self-organizing acquisition of certain competencies by a person, in particular in everyday activities related to professional, social or other activities, family or leisure.

5) Qualifications and learning outcomes obtained through non-formal and informal education can be confirmed and recognized in the formal education system or in other cases, provided for by Ukraine's legislation.

The definitions given here are not identical to the UNESCO Education Glossary definitions but do not contradict them.

## **2.2. Environmental Education Pedagogy: Literature Review**

There are different conceptual frameworks and learning models in the environmental movement, as there are different perspectives on the root causes of environmental problems and the various approaches to change situations.

Even though the definition of «environmental education» has many different interpretations, for example, Lucas classified the term in three categories: education about the environment, education for the environment, and education in the environment. Thus, he wanted to reduce the ambiguity of the term. The category «education about the environment» assumes the cognitive perception of environmental issues.

«Education for the environment» has specific objectives and aims to preserve nature. In contrast to the previous two categories, the third category, «education in the environment», is centered on the methodology, in which extracurricular activities are carried out through direct contact with the environment and society [Lucas 1980: 166]. Environmental education as «education in the environment» was introduced into school curricula in Western countries as early as the 1970s and 1980s. In the 90s, the role of socially critical education increased, therefore, «education for the environment» began to increase.

In the 70s, Steve van Matre developed the concept of Earth Education, which positioned itself as a «green» approach and an alternative to environmental education. The goal of this concept is to «build a sense of relationship with the natural world and to directly interact with the living things around them» [Gough 2010: 2]. The main goal of Earth Education is to develop a human species that will identify with nature. This approach should promote the development of sensory perception and understanding of the general picture of life.

Besides, there is a curriculum theory. According to Eisner, five main orientations determine the curriculum structure and the specifics of approaches.

The first orientation is the development of cognitive abilities. This training program provides for the creation of a didactic system in such a way as to provide all conditions for the development of cognitive abilities and thinking skills of students. Cognitive abilities involve the abili-



ty to reason, think, make assumptions and hypotheses, draw conclusions, seek solutions to problems, make generalizations, etc. Eisner emphasizes that teaching in this orientation requires educators to create theoretical problems for students to work on and raise questions that stimulate cognitive development [Eisner 2017: 85]. As part of environmental education, such a program emphasizes the importance of critical thinking.

The second orientation is called academic rationalism. Its goal is to ensure the student's intellectual growth and development based on mastering the standards of rationality, samples of intellectual activity, and methods of studying academic disciplines. An environmental education program can focus on the study of the environment.

The third orientation is personal relevance. It emphasizes the priority of the individual's interests in the educational process and the value of personal achievements. This approach is also called humanistic since students can be active participants in the development of the curriculum and, as a rule, it is assumed that this approach will be more effective. Such a contractual curriculum assumes that within the framework of environmental education, the teacher, in cooperation with the students, develops the curriculum, not necessarily in accordance with the required content. Although students are engaged in their projects in the process of such training, it becomes difficult to assess the results, since initially everyone's goals are individual; therefore, when assessing, not the final result is taken into account, but the process.

The fourth orientation is called social adaptation and reconstruction. Within this orientation, the main goal is to analyze and ensure the interests of society. This approach should ensure the formation of the competencies necessary for social development and reform. The task of the school is to identify social needs and provide programs that match those identified needs. The idea is to teach students to recognize real problems in society and look for tools to solve them. As a result, they should learn to think critically, question regulatory grounds, and, if necessary, reform the current system of public relations, which is a fairly effective approach within the framework of environmental education.

The fifth orientation is curriculum as technology. This orientation's main task is to organize student learning and create a curriculum with strategies and techniques for achieving desired results. Such a technological plan usually has goals and objectives that the teacher can use as criteria for effective assessment.

### 2.3. General Secondary Education in Ukraine

One of the essential issues of reforming the education sector is creating an effective network of educational institutions based on demography, territorial characteristics, quality of education, etc.

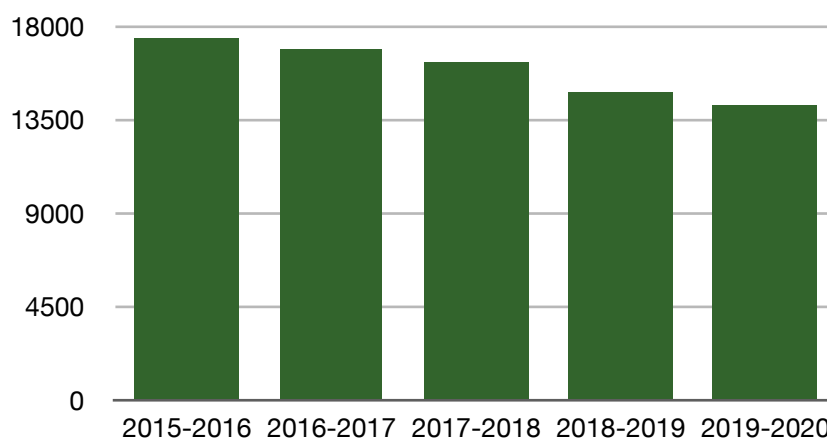


Table 1. Dynamics of changes in the total number of general secondary education institutions subordinated to the Ministry of Education and Science of Ukraine [MES Report 2019: 9], [NUS News 2020]

Table 1 shows the tendency of a decrease in the number of schools in Ukraine in recent years. According to the Ministry of Education and Science, the decrease in schools' number was made at the expense of small and uncompetitive schools [MES Report 2019: 9]. According to the Ministry of Education and Science of Ukraine, in the 2017/2018 academic year, 3.911 million schoolchildren were receiving education in 16,176 institutions of general secondary education. As of 2020, there are now 14,175 schools in Ukraine (public schools, not counting branches supporting institutions, boarding schools, special schools, and private institutions), and 3.962 million students.

At the beginning of the 2015/2016 academic year, there were 446,304 teachers in general education institutions, and in the 2014/2015 academic year - 453,557 teachers, in the 2017/2018 academic year 437,471 teachers [MES Report 2019: 22], in the 2019/2020 academic year 438,486 teachers. Among them [MOF Report 2020], 54,5% worked in cities and 45,5% in rural areas. 15.1% of all teachers of retirement age. The average number of students per teacher is 9 [MOF Report 2020].

General secondary education in Ukraine is a state policy, a system of measures, material, practical and theoretical support for the provision of educational services in general secondary educational institutions, and a system of educational institutions that provide such an educational level.

Complete general secondary education consists of three levels:

1) primary education - the first level of complete general secondary education, assumes that the student fulfills the requirements for learning outcomes determined by the state standard of primary education;

2) basic secondary education - the second level of complete general secondary education, involves the fulfillment of the requirements for learning outcomes, as determined by the state standard of basic secondary education, by the student;

3) profile secondary education - the third level of complete general secondary education involves the student's fulfillment of the requirements for learning outcomes, determined by the state standard of profile secondary education.

In educational institutions, primary education is acquired within four years, basic secondary education is acquired within five years, and specialized secondary education is acquired within three years.

Education under the twelve-year school program for primary and specialized secondary education began on September 1, 2018, and for basic secondary education - it is due to begin on September 1, 2022. This is the second attempt to introduce twelve-year education in Ukrainian schools. According to the decree of the Cabinet of Ministers of Ukraine in 2001, a gradual transition of general education institutions to a new content, structure and twelve-year period of study began, which provided for unloading students during each academic year, updating the content of education and switching to a competent approach to organizing the educational process. However, in 2010, the 12-year school system was canceled because the reform did not live up to its expectations and due to a lack of budgetary funds, switching back to the 11-year education system. Thus, specialized secondary education was reduced from three years to two.

On January 16, 2020, the Verkhovna Rada of Ukraine adopted a new Law «On a new general secondary education», which provides for many innovations, among which, for example, teacher's pedagogical autonomy, additional individual or group consultations for students, more rights for student self-government, etc. There is no direct thesis regarding environmental education in the innovations this year.

### ***2.3.1. Financing Mechanisms***

Following Article 78 of the Law of Ukraine «On Education», the state ensures the allocation of funds for education in the amount of at least 7 percent of gross domestic product from the state, local budgets, and other sources of funding [Law of Ukraine on Education].

The primary source of expenditure on education is the state and local budgets. Budget expenditures on education are used to finance: preschool education, general secondary education, vocational education, higher education, postgraduate education, extracurricular education and extracurricular activities with children, programs of material support of educational institutions, basic and applied research and development in the field of education, other institutions and activities in the field of education. The largest share of consolidated budget expenditures on education in 2014 - 2018 fell on general secondary education (42,4 - 48,4%). According to the Ministry of Finance of Ukraine in 2018, the average cost per student at school amounted to UAH 21 320 per year, and in 2019 - UAH 23 083 per year [MOF Report 2020].

Funding for general secondary education occurs based on co-financing. This year, transfers in the form of subventions were made from the state budget to local budgets:

- for the salary of teaching staff (educational subvention)
- to provide high-quality, modern, and affordable general education «New Ukrainian School»;
- for the creation and repair of existing sports complexes at institutions of general secondary education;
- for implementing measures aimed at improving the quality of education (equipping with computer equipment and providing access to the Internet, purchasing school buses, etc.) [MES Report 2019: 9].

Funds are allocated from local budgets for the maintenance of educational institutions and capital expenditures, and other necessary expenditures.

## **2.4. Environmental Education in Ukraine**

### ***2.4.1. Legal Regulation of Environmental Education in Ukraine***

The main legislative act in the Ukrainian environmental legislation system, which enshrined the legal foundations of environmental education, is the Law of Ukraine «On Environmental Protection». This law secured citizens' right to receive environmental education and established that environmental knowledge is a mandatory qualification requirement for all officials whose activities are related to the use of natural resources and can affect the state of the

environment. Besides, article 7 specifies the provision on improving the ecological culture of society and professional training of specialists, which are provided by general compulsory comprehensive education and upbringing in the field of environmental protection, including in preschool children's institutions, in the system of general secondary, vocational and higher education, advanced training and retraining of personnel [Law of Ukraine «On Environmental Protection»]. The named law laid the foundation for forming a system of legal regulation in the field of environmental education in Ukraine.

In 2001, the Collegium of the Ministry of Education and Science of Ukraine approved the «Concept of Environmental Education in Ukraine». The country's legislation stipulates that the purpose of this concept is «versatile training of citizens who can determine, understand and optimally solve the environmental and socio-economic problems of the regions of residence based on scientific knowledge of biosphere development processes, common sense, common human experience and values» [Legislation of Ukraine «On the concept of environmental education in Ukraine»].

The world agenda has contributed to legislative activity within the framework of environmental education. Such a consistent transition of Ukraine, like the entire world community, to sustainable development is taking place in accordance with the recommendations and principles set out in the documents of the United Nations Conference on the Environment (UNCE). Ukraine joined 55 countries in March 2005, which signed the UN document «Strategy for Education for Sustainable Development» [UNECE Report 2016: 75].

Over the past decade, the main among the legislative acts, which consolidated the conceptual foundations of Ukraine's environmental policy in the field of environmental protection, the use of natural resources and ensuring environmental safety, was the law on «Basic principles (strategies) of the state environmental policy of Ukraine for the period until 2020», which was approved in 2010. The number one strategic goal was recognized as «raising the level of public environmental awareness» of the population [Legislation of Ukraine]. To achieve this goal, the following tasks were set, for example:

- 1) creation of a national information system for environmental protection;
- 2) development by 2012 and implementation by 2020 of a program to support projects of public environmental organizations and bringing the volume of its funding: in 2015 - to the level of at least 2% of the total expenditures of the State Fund for Environmental Protection of Ukraine, in 2020 - to the level of at least 3 % of these expenses;

3) development by 2015 and implementation of the Environmental Education Strategy for the sustainable development of Ukrainian society and the economy of Ukraine;

4) development by 2015 of an organizational mechanism at the local, regional and national levels to actively involve the public in the process of environmental education for sustainable development, environmental education and upbringing;

5) inclusion of environmental culture issues, environmental education, and awareness in the state target, regional and local development programs [Legislation of Ukraine].

However, the Law of Ukraine on «Basic principles (strategies) of the state environmental policy of Ukraine for the period up to 2020» lost its force in 2020 from the date of entry by this Law of Ukraine on «Basic principles (strategies) of the state environmental policy of Ukraine for the period up to 2030».

According to the law, which entered into force on January 1, 2020, the state environmental policy's main principles are the achievement of the Sustainable Development Goals (SDGs) by Ukraine, which were approved at the UN Sustainable Development Summit in 2015 [Legislation of Ukraine]. According to Ukraine's law on «Basic principles (strategies) of the state environmental policy of Ukraine for the period up to 2030» education for sustainable development will establish methodological foundations and introduce continuous environmental education. Comprehensive environmental education and the younger generation's upbringing should develop at an accelerated pace by supporting the activities of out-of-school educational institutions, environmental and naturalistic centers, and natural sections of centers for children and youth and specialized public organizations [Legislation of Ukraine]. The number one strategic goal is to form environmental values and principles of sustainable consumption and production in society. These are the tasks for achieving this goal:

1) introduction of education for sustainable (sustainable) development, environmental education, and upbringing, educational activities to form environmental values in society and increase its environmental awareness;

2) assessing attitudes and raising public awareness for the meaning, benefits and tools of sustainable consumption and production, the state and values of biodiversity and activities;

3) ensuring the practical implementation of the results of modern and fundamental environmental research and continuous interaction between scientists and government agencies;

4) taking into account the recommendations of scientific institutions of the environmental direction when making management decisions and preparing draft regulatory legal acts;

5) development of partnerships between sectors of society to involve all stakeholders in the planning and implementation of environmental policy.

Modern environmental education is a systemic component of the national education system, which operates based on the current legislation on education and the National Strategy for the Development of Education of Ukraine for the period up to 2021, approved by the Presidential Decree. A characteristic feature of modern environmental education is its focus on harmonizing the interaction between society and nature, solving environmental problems and sustainable development of society. The goals and objectives of environmental education are determined, taking into account the national environmental policy's goals and objectives. The promising tasks in the field of environmental education in this strategy include strengthening the environmental and legal training of pupils and students. The modernization of the content of education, in turn, should contribute to the training of specialists for sustainable development with a new environmental approach and environmental culture [Legislation of Ukraine].

#### ***2.4.2. «New Ukrainian School» and Competencies***

The New Ukrainian School is a crucial long-term reform developed by the Ministry of Education and Science. The main goal of which is «to create a school that will be pleasant to study and that will give students not only knowledge but also the ability to apply it in life» [NUS Concept 2016: 11]. The implementation plan provides for continuity of actions and appropriate resources at each stage.

The first phase of the reform «The new Ukrainian school» began in 2016-2017 and provided for the renewal of the primary school curriculum. Simultaneously, according to the plan, primary school teachers' training programs were being prepared, and pedagogical education began to be reoriented to competency-based principles, partnership pedagogy, and individual approach.

The Ministry of Education and Science emphasizes that the school should be «at the forefront of social change» [NUS Official Website]. According to the New Ukrainian School concept, a school graduate is a «person, patriot, innovator» [NUS Concept 2016: 6]. Personality is a «comprehensively developed, capable of critical thinking human» [NUS Concept 2016: 6]. A patriot is a person «with an active position, who acts following moral and ethical principles and can make responsible decisions, respecting the dignity and human rights» [NUS Concept 2016: 6]. An innovator is a person who can «change the world around him, develop the economy on the principles of sustainable development, compete in the labor market, and learn throughout life». In the presentation of educational reform, they raise the topic that «modern children are significantly

different from previous generations» and that in today's world, there is a demand for knowledge and skills interrelated with the values of the student. So it is essential to focus on shaping his life competencies, which are necessary for successful self-realization in life, study and work.

The new Law «On Education» (No. 3491-d of 04.04.2016) provides for the formation of such key competencies in school education as:

- fluency in the state language;
- ability to communicate in native (in case of difference from the state) and foreign languages;
- mathematical competence;
- competencies in the field of natural sciences, engineering and technology;
- innovation;
- environmental competence;
- civic and social competencies related to the ideas of democracy, justice, equality, human rights, prosperity and healthy lifestyles, with the awareness of equal rights and opportunities;
- lifelong learning;
- information and communication competence;
- cultural competence;
- entrepreneurship and financial literacy;
- other competencies provided by the standard of education.

According to the reform of school education, soft skills are reading comprehension, the ability to express own opinion orally and in writing, critical and systematic thinking, the ability to logically justify position, creativity, initiative, the ability to constructively manage emotions, assess risks, make decisions, solve problems, and ability to cooperate with other people.

Environmental competence should also be developed in students through cross-cutting themes that are included in any school subject. This competence includes a rational attitude to natural resources, awareness of the role of the environment in human life and health, the ability and desire to lead a healthy lifestyle. The formation of values emphasizes the importance of «respect for the environment» among other socio-political values [NUS Concept 2016: p. 19].

The New Ukrainian School (NUS) envisages the end-to-end application of information and communication technologies in educational institutions' educational process and management. Information and communication technologies should expand the teacher's capabilities and optimize management processes, forming of the student necessary for the 21st-century technological competencies.



The new educational standards will be based on the «Recommendations of the European Parliament and the Council of the European Union on the formation of key competences for lifelong learning» (18 December 2006), but not limited to it.

«The state guarantees the academic, organizational, human and financial autonomy of educational institutions.»

Draft of the new fundamental Law of Ukraine «On Education», Article 23

One of the main points of the reform is school autonomy and improving the quality of education. Under conditions of decentralization, administrative and teaching powers are delegated at the level of the educational institution. Schools can independently form educational programs, compile a curriculum and, curriculum according to secondary education standards, freely choose educational materials, methods and approaches to teaching, and develop their educational facilities.

In the 2017/2018 academic year, 100 Ukrainian schools became participants in a pilot project according to the new State Standard of Primary General Education as part of the NUS educational reform. The selection of pilot schools was held on a competitive basis. In total, four schools were selected in each region and Kyiv. In each of the schools, a pilot program was implemented in the first two grades. There are 200 classes in total [NUS 01.01.2017]. These students have already completed the 3rd grade and moved to the 4th grade (the academic year 2020/2021).

Undoubtedly, teachers play a central role in reforming the educational process because they are the ones who implement the planned changes. Accordingly, they must undergo retraining and improve their qualifications.

The decree of the Ministry of Education and Science approved a standard training program for teachers (about 22 thousand), who were supposed to start teaching the first grades in September 2018. The program consists of an online distance course and three face-to-face sessions at regional postgraduate pedagogical education institutions. During these sessions, specially trained trainers consolidate teachers' knowledge in practice [MES Report 2019: 191].

## **2.5. Tasks and Forms of Environmental Education in the Ukrainian School System**

According to the Encyclopedia of Modern Ukraine, «environmental education» is a kind of professional education that provides training for specialists from various ecology fields [Encyclopedia of Modern Ukraine]. Following international requirements, the basic idea and methodological basis of environmental education is to harmonize relations between society and

nature. The main components of environmental education: formal and non-formal education and upbringing, environmental education, postgraduate environmental education, training in this area.

According to the Concept of Environmental Education of Ukraine (2001), its main principles are complexity, continuity, and dissemination among the population, taking into account individual professional interests, incentives and characteristics of social and territorial groups. The main task of environmental education: the formation of a high environmental culture of all strata of the population, training specialists for various types of environmental activities. Environmental education combines the following components: environmental knowledge, thinking, worldview, ethics, culture. They implement it through a continuous training and education system, which provides for several stages.

Preschool environmental education is a level at which family education plays a significant role. Its main task is to form the child's first ideas about the environment, a sense of respect and responsibility for all living things surrounding him. At the same time, preference is given to the emotional and aesthetic perception of nature, the development of aesthetic, intellectual, humanistic feelings and ethical norms.

General secondary environmental education is the main link in the environmental education system. Its purpose is to form a personality with ecocentric thinking and morality, a high environmental culture level. In general education schools, environmental knowledge must be provided in volumes determined depending on students' age with a gradual deepening of environmental information. The priority of environmental school education is a personal orientation towards the value of nature, the formation of knowledge about the basic environmental laws, the essence of ecology as a science, its structure, significance and relationship with other sciences, the features of the influence of scientific and technological progress on the biosphere, and the main provisions of environmental legislation.

In senior classes, special attention is paid to the principles of environmentally balanced development, types of nature conservation, activities, regional environmental problems of Ukraine, and the specifics of the state's environmentally friendly development.

Environmental education in public education institutions can be implemented according to 3 models: single-subject, multi-subject and mixed.

Extracurricular environmental education is an additional form of greening the educational process to deepen the basic school level of environmental education, preparing for professional and social activities in environmental protection. It is provided by all out-of-school educa-

tional institutions (environmental and naturalistic centers, scientific circles, botanical gardens, local history museums, etc.) during extracurricular hours. The main tasks of such structures are the organization of meaningful ecologically useful leisure time, education of the need for communication with nature, participation in activities for its protection, improvement of knowledge by holding school olympiads and competitions. Among the forms of out-of-school environmental education, there are olympiads, scientific conferences, summer environmental camps, excursions, thematic environmental actions, expeditions, festivals, and competitions.

## **2.6. Summary**

Environmental education is a complex area that includes not only the principles of environmental education but also the education of environmental awareness and education throughout life. Today, Ukraine's environmental education is a systemic component of the national education system, which operates based on the current legislation on education and the National Education Development Strategy of Ukraine for the period up to 2021. Since 2020, the law of Ukraine on «Basic principles of state environmental policy of Ukraine for the period up to 2030» has been in force, the purpose of which is to form environmental values in society, principles of sustainable consumption and production, as well as environmental education and the introduction of continuous environmental education. In general education schools, the reform «New Ukrainian School» is responsible for this, which has introduced several innovations in school education recently. The competency-based approach in school education involves acquiring knowledge and the formation of life skills, which are recognized as significant outside the education system. Among them are environmental competence, which provides for environmental awareness, a rational attitude to resources, the ability and desire to lead a healthy lifestyle. According to the new reform, schools can independently form educational programs, draw up a curriculum considering the standards of secondary education, freely choose teaching materials and teaching approaches, and develop their own educational and material base. After decentralization, schools are funded from the local budget.

## **CHAPTER 3 - Methodology**

### **3.1. Introduction**

The previous chapter discussed literature and definitions related to environmental education, state policy in Ukraine, the reform of environmental education, and the development and modification of curricula. This chapter will review the research methodology and the processes used in the analysis of the collected data.

### **3.2. Purpose of Methodological Approach**

A qualitative research method used in the study is a semi-structured interview with experts.

The purpose of the interview is to find out how experts perceive the development of environmental education, which methods and tools are used in environmental education in schools, which topics are addressed in this context, and who has a more significant influence on the educational process, who plays a passive or active role in this process. Respondents' answers should complement the study of literature and official documents.

The study explores the field of environmental education in Ukraine. I want to focus on the main tendencies in the development of formal and non-formal education sectors. The representatives of both sectors help determine the strategies and tools used in the country's environmental education process. It is also essential to discuss the strengths, weaknesses, and challenges and problems faced by the educational process subjects. I want to know this to contribute to environmental education and understand which gaps should be filled to develop the young generation's environmental competence.

### **3.3. Recruitment and Sampling**

Representatives of the formal and non-formal environmental education sector in Ukraine were invited to participate in qualitative research. The search and selection of experts are some of the essential stages of the research. As the criteria for selecting experts, first of all, the occupation, their qualifications and, of course, work experience in the field of formal or informal environmental education in Ukraine were taken into account.

A research strategy was used first [Kruse 2014: 257]. The preliminary study made it possible to identify potential experts in formal and non-formal environmental education in Ukraine

and improve the quality of this sample by using a combination of different methods (triangulation). It serves to balance one method's weaknesses with others' strengths [Gläser, Laudel 2010: 105].

Electronic sources were studied initially (news feeds, social networks, homepages of educational institutions, etc.). Three informal preliminary interviews were conducted to find active subjects in the context of the study. Then the snowball method helped to identify the subsequent interviewees. This method's effectiveness lies in the fact that the respondent at the end of the interview helps to identify other potential candidates who are part of the group of specialists on the topic under study [Kruse 2014: 255]. The snowball method increases the probability of finding experts in the research area. Contacts were established via email.

Sampling was a list of experts prepared based on professional knowledge and experience in environmental education. The experts for interviews are based in Kyiv and Mykolayiv.

In total, three groups were formed. The first group includes representatives of the private sector, namely companies actively involved in non-formal environmental education in Ukraine. The second group consists of representatives of non-governmental organizations and youth movements which are also non-formal environmental education participants. The third group consists of representatives of the formal sector, namely the principals of general secondary educational schools in Ukraine. In total, nine respondents took part in the qualitative study. Seven participants gave their consent to disclose their name, type of activity and the name of the company or organization they represent, and two respondents chose to remain anonymous.

The first group is represented by two transnational companies, one of which is the largest producer of food and beverages in Ukraine and globally. The second company is the company branch in Ukraine, which produces beverages. The representative of the first company holds the position of Regulatory Affairs Manager, the representative of the second company is the Government Relation Manager. Both companies position themselves as companies that strive for sustainable development in the market and implement this goal in all aspects of the business. Besides, both companies are actively involved in various environmental and educational projects and generally contribute to its implementation. Therefore, in the context of non-formal environmental education, they are of great interest for research.

For the second group, four organizations were chosen «Let's Do It, Ukraine», «No Waste Ukraine», «Successful City Mykolayiv» and «Klitschko Foundation», and, accordingly, four respondents from this group - Julia Markhel, Eugenia Aratovska, Alla Riazhskikh and Vasyl Teremta.

Julia Markhel is president of «Let's do it, Ukraine», head of «School Recycling World», and eco-activist. «Let's do it, Ukraine» is a non-governmental organization and all-Ukrainian youth movement that implements international, national and regional projects. The NGO operates in 24 regions of Ukraine [LDIU Official Website]. This organization is part of the international movement Let's Do It World, which coordinates and supports a global movement in 180 countries, developing educational programs for sustainable development, using «learning by doing» approaches in such a non-formal educational process [LDIW Official Website]. The organization «Let's do it, Ukraine» was officially registered in 2014 by an initiative group of eco-activists. The NGO's primary goal is «to form a national culture of cleanliness, proper waste handling and respect for the environment in every citizen of our state - from junior to senior» [LDIU Official Website].

One of the organization's projects is the all-Ukrainian educational project School Recycling, which was created to develop schoolchildren's environmental literacy, provided by the «New Ukrainian School» reform. The goal of the project is to promote the principles of environmental responsibility, as well as the development of environmental awareness. The School Recycling project brought together more than 20,000 schoolchildren for the period 2015-2018.

The next expert in this group is Eugenia Aratovska - the founder of the project «No Waste Ukraine», eco-activist and waste management expert. Since 2015, the public organization No Waste Ukraine has been working to provide systemic opportunities for Ukrainians to separate their household waste and reduce the negative impact on the environment. The organization has opened a waste sorting station in Kyiv. It is also seeking to open public waste sorting stations in all Ukrainian cities so that people can form new good habits through the practice of sorting. Their goal is to educate people about a responsible waste management culture and stop dumping waste in landfills. «No Waste Ukraine» conducts lectures on sorting garbage and excursions at the station for office workers, coworking spaces, large and small teams, schoolchildren and preschoolers. They also design training courses and educational posters [No Waste Ukraine Official Website].

The third expert in this group is Alla Riazhskikh, chairman of the public organization «Successful City Mykolayiv». The purpose of the organization is to improve the environment and urban space for residents and guests of Mykolayiv. The public organization «Successful city Mykolayiv» was created in 2016. «Successful city Mykolayiv» defines itself as an organization that «equally directs to the problems of improvement and ecology, health protection and personal development of citizens, overcoming possible barriers to the development and self-realization of every citizen of Mykolayiv» [Successful City Mykolayiv Official Website]. In 2016, we held the

International Investment Forum «WMforum2016» on a volunteer basis on behalf of the mayor of the city of Mykolayiv. Within the framework of the program «Mykolayiv without dumps 2020», together with the public organization «No Waste Ukraine» and the municipal institution «Development Agency of Mykolayiv» began work on sorting garbage in schools of the city, the initiatives presented to develop a comprehensive program for the management of solid household waste (MSW), proposed standards for waste collection sites, social areas, etc.

The fourth expert in this group is Vasyl Teremta, Project Manager at the Klitschko Foundation. The Klitschko Foundation is a charitable organization that implements all-Ukrainian charitable projects in education, sports and science. The organization was founded in 2003 by Vitali and Wladimir Klitschko. The foundation supports talented youth, popularizes a healthy lifestyle, and assists in developing sports in the country. In terms of non-formal environmental education, the foundation is implementing the Zero Waste School project, a training program for students and teachers to introduce a culture of waste sorting in their schools and communities. The Klitschko Foundation positions itself as an organization «guided by the UN Sustainable Development Goals» and «seeks to provide young people with the knowledge they need to drive change and develop communities» [Klitschko Foundation Official Website]. They also support the global goal «World Without Waste». In addition to introducing a sorting culture in schools, the project aims to «help participants understand the importance of their participation in public life and cooperation within the community» [Klitschko Foundation Official Website].

For the third group, three principals of general education schools in Ukraine were selected as experts in the field of formal education.

The first expert is Volodymyr Zayats, principal of the secondary school of I-III levels No. 1 named after Oleg Olzhich of the Korabelnyi District of Mykolayiv. The school has been operating since 1984, and as of 2020, it has 1062 students.

The second respondent and expert is Olha Tymoshenko, principal of the comprehensive school of I-III levels No. 309 of Kyiv's Darnitsa district. The school has been operating since 1994 and has 1667 students.

The third expert is Olga Slobodianiuk, principal of the secondary school of I-III levels No. 292 named after Hetman of Ukraine Ivan Mazepa, Desnyanskiy district of Kyiv. The school has been operating since 1990 and has 766 students.

### **3.4. Data Collection**

#### ***3.4.1. Interview Type***

The study used a combination of two types of interviews - research and systematic expert interviews.

According to Bogner, expert interviewing is one of the most used methods precisely because of its «explorative function» [Bogner et al. 2002: 38]. Explorative expert interviews are conducted as openly as possible, but with a structure of questions for the main aspects of empirical research. The main focus of the explorative interview is the case study. Comparability, completeness and standardization of data are not considered. This separates the explorative interview from the systematizing and theory generating interview [Bogner et al. 2002: 38].

Systematizing expert interviews are focused on the exclusivity of expert knowledge and are used to extract information that is not freely available. The focus here is on the practical knowledge of the experts. This data is collected using relatively differentiated guidance [Bogner et al. 2002: 38-39]. Regardless of the target group, interviews follow the same trajectory in order to be able to compare and aggregate data.

The interviews were conducted using a pre-created interview guide. A semi-structured expert interview includes questions that the interviewer must ask the informant, but their sequence and wording can change during the communication. In order to bring the interview as close as possible to the conversation's natural course, questions from the guide's interview can also be asked out of turn, if the need arises. Sometimes the respondents themselves can mention a specific necessary topic in the process, and then it makes sense to focus on it rather than postpone it or completely ignore it. The interviewer should receive an answer to each question: from the most complete and detailed to «no, I don't know», which is also relevant information. During the interview, clarifying or additional questions can be formulated since often a complete answer can only be obtained using clarifying questions [Gläser, Laudel 2010: 42]. The information obtained in such studies allows us to identify problems that are subject to further systematic analysis.

The interview guide had five main directions and was created individually for each of the three target groups, taking into account their specifics of work and activity scope. First of all, I wanted to study the experts' answers to the following five primary research questions:

- 1) What is formal and non-formal Environmental Education in Ukraine?
- 2) How has formal and non-formal education changed in recent years in Ukraine, and what are the development trends now?



3) What methods and approaches are used to form an environmental awareness and eco-culture of the young generation?

4) What are the strengths and weaknesses of formal and non-formal environmental education in Ukraine?

5) What stakeholders are involved in the process of creating conditions for EE in Ukraine? (private sector, NGOs, youth organizations, local and regional authorities, etc.)

The interview guide formed five blocks for each group. This division of the manual into five thematic blocks corresponds to the method of standardization and systematization of expert interviews. This method allows respondents to stay within the scope of the research topic. The respondents were asked to answer the questions according to their own experience and express their subjective point of view regarding the empirical research topics.

Respondents' statements were recorded using a recording device. The interviews lasted about an hour. Some of the interviews were conducted in Ukrainian and Russian. The respondent's wishes about the language were taken into account in advance to create the most comfortable environment. After that, each interview was transcribed, a transcript was created, which was sent to each respondent for reading to avoid possible misunderstandings. After that, each transcript was translated into English.

Direct quotes from experts have been shown in italics. The spelling of quotations has been slightly changed. For example, sentence structure or placeholder words have been removed to make the content of the quotation more comfortable to understand.

### ***3.4.2. Expert Interview***

In such a qualitative research method as an expert interview, the source of information is competent persons whose professional activities are closely related to the research subject. The respondent may be someone whose specific knowledge is relevant to research [Gläser, Laudel 2010: 43], and an interview with an expert is a way to develop this knowledge [Gläser, Laudel 2010: 12]. According to Hopf, the concept of a peer interview method is as follows:

«Qualitative Interviews können unter anderen geführt werden: als Experteninterviews, in denen die Befragten als Spezialisten für bestimmte Konstellationen befragt werden..., oder als Interviews, in denen es um die Erfassung von Deutungen, Sichtweisen und Einstellungen der Befragten selbst geht.» [Hopf 1993: 15]

Meuser and Nagel define an «expert» as someone who «is in some way responsible for developing, implementing or overseeing a solution to a problem», or «who has privileged access to information about groups of people or decision-making processes» [Meuser, Nagel 1991: 443].

The interviewed experts from the private sector, public organizations and directly from secondary schools have specific knowledge that they have acquired through their work and active social activities in the field of formal and non-formal environmental education. According to Bogner, there are three different expert knowledge meanings: explanatory, process and technical knowledge [Bogner et al. 2002: 43-44].

Explanatory knowledge is a type of knowledge that is the subjective views of an expert and not a homogeneous objective body of knowledge. This type of knowledge consists of subjective interpretations of beliefs, rules, and relevances. Respondents' answers obtained in individual expert interviews can be divided into groups according to their background [Bogner et al. 2002: 43-45].

Process knowledge is a type of knowledge based on experience gained as a result of one's activities, as well as on past or current events in which an expert is directly involved in connection with his practical work in his field [Bogner et al. 2002: 43].

Technical knowledge is a type of knowledge that implies particular knowledge in a specific research area, namely data, facts, and detailed information about operations. As a rule, experts have privileged access to certain information that is not in the public domain.

There are a few advantages to the method as an expert interview [Bogner et al. 2002: 63]:

- fast access to the unknown field;
- receiving high-quality information from experts in the field of study;
- generating hypotheses, ideas and suggestions;
- the ability to gain access to «closed» groups and information, as well as highly specialized industries;
- assessment of situations and data;
- there is no need for many experts since it is not the quantity that matters but the respondents' quality;
- often willing to cooperate and exchange.

Type of interview - individual and remote interview. The interviews were conducted via Zoom. Between July and September of 2020, I conducted nine interviews, lasting on average about an hour.

### ***3.4.3. Secondary Data Collection: Literature Review***

In the process of preliminary research, selection of participants, and directly as a result of communication and conducting an expert interview, relevant references were identified: educational literature, educational materials, annual reports on the activities of companies and public organizations. Secondary data also helped to delve deeper into the research topic's essence to find out specific details of a particular organization's activities.

## **3.5. Data Analysis**

According to Mayring, the goal of quality content analysis is «to analyze the material resulting from any type of communication» [Mayring 2003: 11]. This assessment method is considered the standard analysis in empirical social research. The subject of content analysis can be any recorded or recorded type of communication, for example, video recording, audio recording, written document).

The qualitative content analysis relies on the inductive method of obtaining information, emphasizing its singularity of the studied phenomena and their complexity. It usually analyzes massive amounts of text, but it is also based on the requirement to consider individual texts, especially when encoding [Früh 2015: 69]. The high-quality content analysis aims to understand the phenomena under study and analyze these phenomena's relationships and processes. Although qualitative content analysis is focused on covering the entire complexity of the processes under study, it is also aimed at studying individual cases.

Philipp Mayring identifies five areas of application for qualitative content analysis: communication science (content-analysis), hermeneutics (as the art of interpretation), qualitative social research (interpretive paradigm), literary criticism, and the psychology of text processing [Mayring 2003: 24-41].

The qualitative content analysis considers the interview texts to be assessed as data material. With good content analysis, raw data needs to extract data that can work with, prepare the data, and evaluate it. There is a difference between extracting data and encoding data. Coding indexes the text so that it can be evaluated. Thus, it makes text and index a common subject of evaluation. Extraction takes information from the text and evaluates that information [Gläser, Laudel 2010: 199]. After extracting relevant information from interview texts, the next step is to create a category system. The system of categories for extraction is based on assumptions and hypotheses formulated in theoretical passages [Gläser, Laudel 2010: 201].

Following the research interests, Mayring identifies three qualitative analysis techniques: summarizing, the study of the content itself (explication) and structuring [Mayring 2003: 58]. The goal of qualitative content analysis through the summarizing technique is to shorten material so that the main content is retained and is still an image of the primary material [Mayring 2003: 58]. The level of abstraction can be generalized step by step. Summary becomes more and more abstract [Kruse 2014: 416].

Explication is focused on analyzing parts of the text (concepts, statements) that raise questions, which allows us to expand our understanding of the essence of the phenomena being studied [Mayring 2003: 58]. «Forms of explication are possible which use the textual context for the elucidation of a particular text passage (narrow contextual analysis); however, the most common method of hermeneutical interpretation is to use further material beyond the textual context for explication (broad contextual analysis)» [Mayring 2014: 64].

The purpose of the analysis is to filter out certain aspects of the material by structure so that it can be reassessed based on specific criteria [Mayring 2003: 58]. «The structuring categories can form an ordinal scale or can remain as nominal categories. Furthermore, mixed procedures with inductive and deductive steps of analysis (e.g., theme analysis, typological analysis) should be conceptualized as well» [Mayring 2014: 64]. The central help in this qualitative content analysis technique is the coding guide.

According to Mayring, qualitative content analysis is not focused on identifying individual factors but aims to create possible relationships between various factors and processes. The advantage of the interview analysis method is a deep immersion in the topic and high information content. The disadvantage of the method is the study's subjectivity, the lack of the possibility of statistical confirmation of hypotheses.

### **3.6. Ethical Consideration**

#### ***3.6.1. Prior Informed Consent***

The first contact and subsequent communication with potential experts took place through emails. The contact details of possible interviewees were found on official websites or based on publicly available information. Some possible interviewees were suggested by experts already interviewed, also from their partners or colleagues. Upon first email contact, an abstract of the qualitative research and a summary of the researcher was provided. For feedback and questions about interview details, more details were provided. Besides, before the interview itself, all partici-

pants read and then signed the Consent Form. They were informed about the interview's conditions and format and had the right to choose the terms of anonymity.

### ***3.6.2. Anonymization***

As a result, all nine participants gave written consent in Ukrainian and English to be interviewed. Two of the participants chose the terms of anonymity due to corporate ethics. It involves coding their names and the name of the company they represent but allows them to describe their company's scope and name the department in which they work. The other seven participants gladly agreed that the name of the company, organization, or department can be mentioned, also that the description of the activities of the company, organization, department will be mentioned in the research work, and agreed to describe their institutional background (type of activity) in the research work.

### **3.7. Summary**

A qualitative research method used in the study is a semi-structured interview with experts. Representatives of the formal and non-formal environmental education sector in Ukraine were invited to participate in qualitative research. A semi-structured interview includes the interview guide questions that the interviewer should ask the informant, but their sequence and wording may change during the communication. For this, three interviews of the guide were compiled in advance for each group: representatives of non-governmental organizations and youth movements, companies, and school principals. The purpose of the interview is to find out how experts perceive the development of environmental education, what methods and tools are used in environmental education in schools, what approaches and methods are involved in the process, with whom they cooperate in their educational projects. Respondents' answers should complement the study of literature and official documents. The study takes into account the professional experience of the respondents and their subjective point of view. The analysis method is qualitative content analysis, which involves summarizing content, actually examining the content and structuring. This method aims to create possible relationships between various factors and processes.

## **CHAPTER 4 - Results and Conclusions**

### **4.1. Analysis of the Interviews**

This chapter presents the results of nine interviews with experts on the topic of formal and non-formal environmental education in Ukrainian schools.

The collected data will be interpreted, analyzed, and compared with each other and with existing assumptions.

The coding took place after the transcription of each interview was created. Semantic units consisting of at least one sentence were coded. As a result, the codes have been grouped into categories. Some codes are concise, while others are written in more detail. What was astounding about the coding was that recurring themes and aspects came up in all interviews. As a result, the following categories appeared:

- 1) Relevance of environmental education in Ukraine
- 2) Reflection of formal environmental education
- 3) Relevance of / Demand for non-formal environmental education in Ukraine
- 4) Strengths and weaknesses of both sectors
- 5) Cooperation of the stakeholders

In the following paragraphs, these categories are presented in more detail and supported by direct quotes from interviews.

### **4.2. Relevance of Environmental Education in Ukraine**

Chapter 2.1. has already defined such a broad concept as «environmental education». This chapter examines the interviewees' understanding of what environmental education is. Most of the respondents tried to define this term, supporting their answer with the statement that this is their subjective opinion. Some respondents immediately began to speak in the affirmative form about the relevance of environmental education in the modern world without defining it.

The comments below illustrate that environmental education's task is to understand how wildlife functions and the relationship between involved processes. This will make it possible to realize how the human factor can affect the environment as part of this system.

«Environmental education forms causality by schoolchildren about their impact on the environment. That is what gives children the understanding that nothing happens just like that, that any action has its side effects, and we need to be personally responsible for those actions.» (C2: 12)

«Ecology itself presupposes such a relationship between the whole living world, so the loss of one component involves changes in the following components, (...) so for me it is the study of this relationship, understanding the functioning of all living nature and man as a component this process. That's all that surrounds us.» (P3: 76)

Some of the respondents argue that environmental education is a learning process that allows to realize the existence of global problems on the planet and fosters the ability to take responsibility for human actions. Environmental education should teach students to identify a problem, decide how to solve the problem and turn that decision into a positive habit. Some interviews directly or indirectly touched upon the topic of waste management in Ukraine. Therefore, in this context, a «positive habit» directly means competent waste sorting. Responsible consumption is also a positive habit or skill.

«Environmental education is those elements of knowledge and those behavioral skills that we form as a result of motivating schoolchildren to think sustainably and to understand that these UN Sustainable Development Goals have been settled in order to integrate them into action and actively use them in everyday life.» (C2: 12)

Concerning the relevance of environmental education in Ukraine and the world in general, the respondents unanimously stated that the population needs this type of education and the development of eco-culture, naming various reasons why they think so. These reasons can be roughly divided into global, local, and personal.

For example, one of the named global reasons is a fast technical process and globalization, which have many costs in the form of a negative impact on the environment. Today's consumer culture is linear, and there is no universal plan on how to reduce these costs.

«This [EE] is vital because now total globalization and total urbanization are underway. We see that progress cannot be stopped at all, (...) if before there were at least two years before the release of a new gadget, now every half a year there is updating or releasing a new gadget, and of course they slow down old programs and need to be thrown away. Moreover, where to throw it away? How to dispose of it?» (P1: 59)

Some respondents have taken a different approach by focusing on local environmental issues justifying the importance of environmental education in the Ukrainian schools. One of the most critical problems mentioned earlier is the problem of waste recycling or disposal, as well as garbage landfills that are appalling in their magnitude.

«Our city is not very clean, (...) I pass this landfill several times a year in the direction of Ochakov. I saw these terrifying trees with hanging bags on them, this smoke from the landfill, and so on.» (O3: 45)

«The problem in our country is that if somewhere there is a legalized system for the removal of recyclable materials and waste, but there are villages that have no access not to a landfill, not to incineration or processing plants. And they throw garbage in the next pit.» (O2: 36-37)

Besides, this applies not only to official landfills but also to emergency waste dumps that appear illegally. For example, according to an expert, a small or large city may exceed the limit for garbage disposal at a landfill and cannot take waste to its destination; then again, the garbage is taken out to a neighboring village or pit. Thus, 35 thousand illegal dumps appear throughout the country.

Some experts expressed their shock at this topic, because it is an obvious example that lets us understand how specific human actions affect the environment.

Another respondent emphasizes the relevance of environmental education and a conscious attitude to the environment on the example of a local catastrophe and speaks of the need to form cause-and-effect relationships among the population.

«We see what is happening in Western Ukraine, where the microclimate was completely disturbed due to deforestation, where moisture does not linger, it rained and rivers overflowed the banks. (...) To every Ukrainian, it needs to be explained what the deforestation affects, what the barbaric extraction of the same amber affects, when they simply fill in and make a swamp, what the development of open-pit mines affects - all this needs to be explained to children.» (R1: 59)

Fear of «a murky future» is one of the personal reasons that respondents expressed when talking about the importance of environmental education for society. This existential anxiety is associated with some uncertainty. There has even appeared such a term as eco-anxiety, which means «a fairly recent psychological disorder afflicting an increasing number of individuals who worry about the environmental crisis» (Castelloe 2018).

«Participants often write to us about this (...) precisely because they are already afraid because other countries are already doing something to save their environment, sorting garbage, and we are here «at the tail end» and we do not know where to begin.» (O4: 51)



«In addition to socially significant issues, there are also personal issues. I have a granddaughter and it is crucial for me what planet she will live on, whether she has enough air, whether she has enough clean water, whether my descendants have enough of these resources.» (P2: 69)

### **4.3. Reflection of Formal Environmental Education**

This paragraph presents the interview results answering the research question of what changes are taking place in the educational process of the Ukrainian school within the framework of formal environmental education. The first set of questions was aimed at the topic of «New Ukrainian School», and methods and approaches in the school curriculum used to develop environmental competence.

#### ***4.3.1. Changes after «New Ukrainian School» Reform***

During interviews with principals of three schools, it turned out that two of the schools were among the 100 schools participating in the NUS pilot project and tested the State Standard for Primary General Education, which has been described in Chapter 2.4.2. Thus, both schools in Kyiv already have more than three years of experience working with the new educational reform standards. The third school has implemented this teaching standard from the first grade on in 2019.

According to the reviews of the interviewed principals, the topic of ecology and the topic of fostering environmental competence is now cross-cutting into the study of any subjects, as well as the competence of life-long learning. Therefore, «the school should now interest and encourage children so that they learn, not be lazy so that they are always interested in self-education and developed themselves in the industries that interest them» (P1: 60).

For primary school (grades 1-4), a new integrated course, «I Explore the World», was introduced, covering the natural, civil and historical, social field.

«On the school course «I Explore the World», children are involved in solving and discussing issues even about energy sources, what kind of stations there are, how environmentally friendly they are and what is green energy. (...) For example, if the topic of the lesson is «Traveling in Ukraine», children learn not only to buy tickets and plan routes, but they will certainly discuss issues of how to travel ecologically, how to protect nature wherever they go». (P2: 70)

Although the new educational standard is primarily focused on primary school, in grades 5-11 in general, changes were also made, providing a competency-based approach. According to the expert, all methodological recommendations for subjects have a competency-based approach, since this is officially already included in the program.

Besides, the textbook «Biology and Ecology» for the 11th grade of 2019 covers two such complex topics as «Ecology» and «Sustainable Development and Environmental Management». The content line «Ecology» in the textbook is aimed at studying:

- methods of environmental research;
- patterns of influence of environmental factors on organisms;
- populations and their characteristics;
- the relationship of organisms in biogeocenoses, etc.
- The topic «Sustainable development and rational use of natural resources» is aimed at

the formation of ecological culture, social activity, responsibility and readiness to participate in solving environmental protection issues and sustainable (balanced) development of society, and includes the following topics for study:

- Modern environmental problems in the world and Ukraine;
- Types of pollution, their consequences for natural and artificial ecosystems and human health;
- The concept of the quality of the environment;
- Environmental policy of Ukraine;
- The concept of sustainable development and its meaning, etc. [Ostapchenko et al.

2019: 207]

One of the respondents describes the NUS approach:

«The concept of NUS provides for learning through game, again a lot is devoted to such moments as a group and analytical work. Children are taught to think more.» (P1: 60)

In the textbook «Biology and Ecology» (2019), there are, for example, practical tasks in addition to theory. One of them involves assessing the ecological state of the region. In the course of the work, it is necessary to investigate which objects in the region can serve as sources of pollution (industrial enterprises, gas stations, airports, landfills of industrial and domestic waste, etc.) and determine artificial and natural recreational zones and their ecological state. As a result, students should draw conclusions based on the information received about the ecological state of their region, indicate, if possible, the level of compliance with sanitary standards, and suggest possible solutions to potential problems that «will not harm the economy of the region» [Ostapchenko et al. 2019: 171].

Among the changes in formal education, there are also changes in the work of teachers. Since teachers have received autonomy, they now independently determine how best to maintain their lesson program.

«Will there be more emphasis today, for example, on social competence, and in the next lesson, its focus on environmental competence? The teacher's very position and consciousness are important here because I am 100 percent sure that not every teacher forms these competencies in his lesson. It is challenging for our people to change, but we are trying to achieve this.» (P3: 77)

Here, the principal questions the teacher's work and the fact of teacher autonomy as something effective. On the contrary, his colleague claims that teachers share these values and include a competency-based approach in their curriculum since the ministry involved the teachers of their school in the development of these topics. They include their vision and the urgent need for the development of an environmental topic.

#### ***4.3.2. Positive and Negative Changes from Principals' Perspective***

The next question asked the informants about positive changes in formal environmental education at school in recent years according to their opinion.

Among them was the subject «Biology and Ecology» and the textbook itself, which was published in connection with the New Ukrainian School concept for the tenth and eleventh grades. The experts also attributed teachers' professional growth to positive changes since many training and courses have appeared, including in the environmental field, to which one can voluntarily join. The school has a certain freedom thanks to decentralization.

Other responses to this question included additional time for practical practice and game forms of learning. The respondent claims that there are many projects for middle and high schools where students can prove themselves, for example:

«The students had many opportunities to show their ideas and make a difference. (...) In the tenth grade, they have 3D modeling in the in-depth study of computer science and mathematics. They were doing a landscape design project. We have two winners. They are given a piece of land around the school, and they will now implement this project.» (P1: 67)

Regarding the question of less pleasant or adverse events within the framework of formal environmental education and somehow negatively affected the Ukrainian school, no one an-

swered unequivocally. The experts replied that either they could name specific negative changes, or that there were no such changes, or that it was too early to judge the results.

«The concept of education has changed completely and this is very good. Of course, let's see what results will be at the output because we can judge whether it has become better or worse only after graduating at least one-eleventh grade.» (P1: 60)

#### **4.4. Relevance of / Demand for Non-formal EE in Ukraine**

This chapter is devoted to the study of the informal sector in the context of environmental education. Here, the results of interviews with representatives of NGOs, companies, and school principals themselves will be presented in order to get a complete picture of the role non-formal education plays for the Ukrainian school and the younger generation. The results in this chapter show the motivation for starting an organization or company in environmental education and what goals the participants in this educational process set for themselves. Besides, the approaches and methods used in environmental education are discussed in detail on specific examples of non-formal educational projects. In the following paragraphs, it will be described which challenges and problems the representatives of the informal sector face in the process of implementing their projects; how the stakeholders are involved in the process of creating conditions for environmental education in the country.

##### ***4.4.1. School and Non-formal Environmental Education***

This section describes non-formal environmental education projects in which the surveyed schools have participated or are participating. All three schools have experience participating in various eco-projects and competitions.

The first school principal from Mykolayiv said that their school is taking part in two projects. The first project is Healthy Schools, a three-year social program implemented by the Development of CSR Center and the Mondelēz International Foundation. The program's goal is to promote healthy eating, physical activity, and a conscious attitude of schoolchildren to their health. The respondent gives an example of a lesson within the framework of this program: «they made exercise equipment which they needed for themselves, they didn't use harmful plastic, but natural material (stones, bumps), glued them to the track to walk barefoot and to feel better» (P1: 61). The second project directly related to ecology is the Let's Do It, Ukraine project, «a program that teaches the economical use of natural resources and teaches the separate collection of waste and teaches children not to throw away products that can be recycled but to bring them and hand them

over for recycling» ( P1: 61). Zayats V. describes from their school experience that «last year, the most active class with the most of all collected waste, plastic, lids and used batteries, won a free trip to the pool with teachers and parents. They won such a huge prize for themselves» (P1: 61). As part of this project, they have bins for separate waste collection in schools. The school has a curator for this project - a biology and chemistry teacher, and her team consists of a student self-government. They are trained with other eco-patrol teams and then show their program to other children at school.

«I go and look around the school whether or not they share garbage. If there was a «mess» in the beginning, now it is clearly visible that when the child comes up and if he forgot where and what, he is reading, then opens and throws it away correctly. Therefore, I believe that such an additional form of education as non-formal education still serves as an excellent supplement to children's educational material from books.» (P1: 62)

The school principal finds a positive side not only in the fact that children are getting used to the new waste sorting system, but also in the fact that parents have also become more interested in this process:

«What is the positive of all this, that even in quarantine, parents ask whether we accept plastic, or paper, or batteries, so we raise not only children, but also parents.» (P1: 61-62)

The next question asked the informant how they, at school, dispose of waste that they sort at school and he answered that they cooperate with the company «Vtorma», and have 4 containers. The current contractor comes at a certain moment, weighs and picks up, and transfers money to the school. «Obviously, the sums are small, but it is enough for us to collect the entire amount within a year, and then pay for gifts and prizes to the winners» (P1: 68).

The second school from Kyiv also takes part in the Healthy Schools project. They also collaborate with an organization such as «Alternative Greening of Kyiv», which assists them as specialists in landscaping or for seedlings. The school principal told that their school took part in the Energy School by DTEK project five years ago. DTEK is the largest private vertically integrated energy company in Ukraine. The essence of the project was that: «we had to save energy and considered the difference compared to last year, so in parallel, we taught children how and why to save, explained and told how it works; then they got a specific prize, energy-saving lamps, a great opportunity to save even more» (P2: 72). In subsequent years, they also continued to participate in these competitions. As a result, a separate school course for the seventh grade was

added to their school curriculum called «Fundamentals of Energy Supply and Energy Saving». There are topics about alternative energy sources at this course, including «Why do you need to save heat and energy?», and «How to use energy rationally», etc.

«Starting from this age from 13-14 years old, this is the age when children start counting money. The course encourages pupils to become interested in how the household bills are paid. We teach the economic component, but at the same time, we also explain the environmental topic.» (P2: 71)

Tymoshenko O. also told about such an initiative as «Public Budget». This is a platform for implementing ideas for improving the city, where everybody can apply to win a grant for the project. This project is put forward for a vote. The respondent said that in this way they have already implemented the project: «We have made an educational class - open space. Especially due to circumstances such as the coronavirus, we are all encouraged to spend more time outdoors, and we have already created such a class» (P2: 72).

#### ***4.4.2. Representatives of Non-formal EE: Motivation and Goals***

The respondents were asked to indicate when and why the company decided to contribute to environmental education in Ukraine.

The representative of the first company (C1), the largest global beverage producer, said that their company has been investing into and working with environmental education in Ukraine for several years, as this is a global trend. For the last five years, they have been doing this more actively on the country's territory. However, Ukraine was not a pioneer in this sense, since the company is European, and they started working in other European countries in the direction of environmental education. In most cases, these are schools and universities, or they can be projects related to ordinary people or employees' education.

«As a large international company, we understand our impact. Impact on people and the environment. (...) We see European and global trends, and the world is changing very quickly, and our company must also meet some challenges in the international arena, including in Ukraine.» (C1: 2)

The respondent talks about how the company's approach has changed. If earlier the business sector and the industry as a whole treated resources as inexhaustible, they have already changed their approach. They started in the 80s. Their educational projects are dedicated to the top-

ics of «Sustainable Waste Management» and «Responsible Consumption»; as the manufacturing company, they are aware of their impact on the environment. Educational projects are devoted to sustainable development goals, as well.

The second company (C2), a world leader in food production, supports projects related to Ukraine's environmental education, as it realizes its responsibility as a packaging manufacturer.

«Packaging is an essential component in food products from the point of view of shelf life and safety of product storage, (...) we are interested in the entire life cycle of packaging. We understand that we are responsible for what happens when the product has already been used.» (C2: 12)

The project, which has been supported by the company since 2016, is dedicated to the education of schoolchildren, the upbringing and formation of a culture of responsible waste management. Their main message is that plastic should never become trash, and all waste is a valuable raw material. It can be reused. The main task is to cover all schools in Ukraine.

The respondents were asked to indicate what they want to achieve, contributing to environmental education in Ukraine. Both the first and the second company have specific goals that are similar to each other. The first company's goal is to teach people to consume products responsibly through their participation in such educational projects. Besides, they want people to think about how the environmental consequences are formed after consuming the product, and the consumer should be responsible for them as well.

«If a person is not responsible for waste, nothing will work in any way and whatever we do. We understood our impact on the environment a long time ago. Now we are working on getting people to think about their influence, and we, as a company, give them the opportunity, let's say, a certain way out.» (C1: 4)

Globally, they adhere to their green strategy, which sets the goal that by 2030 they should collect and recycle 100% of their packaging. According to the respondent, they are actively working on this sustainable development goal in different countries with different results because conditions and people in different countries differ from each other and an individual approach is needed everywhere.

The second company (C2) indicates that their ultimate goal is to create EPR (Extended Producer Responsibility), a system according to which the manufacturer is responsible for the full

life cycle of packaging, from production to collection, sorting, and transfer for processing. EPR is already in operation in all European countries.

«We thought it was impossible to change the behavior of adults. (...) You really need to form a sorting habit, and this needs to be done with the younger generation, who do not yet have the obsession that this should not be done. Like no one else, they can understand the importance of their role and their task in this.» (C2: 15)

For this reason, they are interested in environmental education in order to, in turn, educate the younger generation in the habit of sorting waste. The country does not have a convenient and ubiquitous infrastructure for proper sorting. In those areas where it is installed, people are not ready for the new system and are not trained to sort waste correctly, so this does not happen efficiently. According to the expert, «the infrastructure will not appear until some kind of habit appears» (C2: 15), so they are working in this direction.

The NGOs' representatives were also asked to indicate when and why the company decided to contribute to Ukraine's environmental education, and how their activities generally began.

Eugenia Aratovska, the founder of the project «No Waste Ukraine» and eco-activist, told that her first steps in the direction of environmental education began at the end of 2014 against the backdrop of the Maidan events, the search for herself and awareness of what is happening with the environment and waste in the country.

«When I found out, it seemed so wild to me that I was in an information vacuum all the time, and that there are so many people who really love nature, they don't want Ukraine to turn into a dump, they don't know about it [a huge number of dumps]; therefore, they do not have a clear desire to sort the garbage.» (O1: 23)

At first, Aratovska E. thought about social entrepreneurship, as she wanted to be financially independent and wanted to devote all her working time only to this project. The plans were to deal with the procurement of secondary resources precisely as a social entrepreneur, so they organized several social entrepreneurship projects. As a result, in just five years, a system was created similar to a classic business that sustains itself. Aratovska E. says that unprofitable activity of the organization, as public sorting stations, are subsidized from social entrepreneurship itself.

«All the money that we earn we send there to keep the infrastructure alive, because it is not always possible to get business support to cover all current costs; (...) although of course we have crowdfunding and fundraising, and this is also part of our financial self-sufficiency model.» (O1: 24)



The inner goal of the founder of «No Waste Ukraine» was to create argumentation within each person - «why am I doing this no matter what» (O1: 23). Initially, it was decided to start with schools and read lectures about separate waste collection, «so that children who receive this base at such a very sensitive age can get some kind of foundation and will already grow up as people with different thoughts, with a different mentality» (O1 : 24). However, then the realization came that «there is no point in lecturing just about the sorting rules in schools» (O1: 24), and that «the most important thing is to create this request for sorting garbage in every person (child or adult)» (O1: 24). A person must find within himself an argument why he will do it despite nothing, waste time, wash packaging, look for a place in an apartment, take it to a sorting station, or to a reception point, or throw it out into a tank. After reflection, the organization began to lecture just about the arguments why this should be done and conduct a dialogue with students, asking what arguments they can offer. These arguments are described in more detail in chapter 4.4.3.

Julia Markhel, president of «Let's do it, Ukraine» and head of «School Recycling World», told that the first organization, Let's Do It, Ukraine, engaged in cleaning territories and streets. Then the question arose of what can be done besides cleaning and why, in general, there is so much garbage around. As a result, the creation of the School Recycling World project was initiated.

«Why did we start doing this? Because it was relevant and we were looking for the reason why there is so much garbage, how we can influence that there was few cleaning, and who is behind it. We realized that if adults do not really want to listen to us, because this is a matter of habit, then children, doing their homework, can influence in some indirect way the behavior of their family.» (O2: 35)

As part of the educational project, the task was to tell and show how it is possible to stop this linear process of waste life, how it should work, and what benefits can be obtained from it. The School Recycling concept was based on this:

«There is garbage. Garbage can be separated; there is garbage that can be used as recyclable materials and sold. Trash is money. Learn to count your money. Buy something in the store that you can sell - that was the first idea.» (O2: 36)

As for what the NGO and the School Recycling project want to achieve within the framework of their activities dedicated to environmental education, these are «17.5 thousand schools that sort waste and sell their recyclables», as well as «as much waste as possible goes to

recycling» (O2: 38). This should serve as an indicator that students understood what they were taught. They have become responsible consumers and competently buy goods and services, doing it as environmentally as possible.

The Klitschko Foundation took its first steps towards «environmental education» with Panasonic: «We created diaries where it was possible to indicate the amount of garbage and mark each item that is sorted» (O4: 51). It was for a younger audience.

Besides, they collaborated with Coca Cola for about 15 years, but initially, they had joint sports projects. Then the head office of Coca Cola in Atlanta changed its strategy so that now, the aim was to completely recycle the plastic they generate in countries with their facilities, especially in eastern Europe, by 2030. Then the foundation changed their strategy as well and decided to do educational projects.

«Previously, we provided sports grounds for sports projects. We realized that in this way we provide exclusively material assistance. It has no long-term effect and has no educational value.» (O4: 52)

In 2017, the organization launched the first pilot project, Zero Waste School, for 50 schools across the country, intending to teach participants how to sort waste. Teremta V., the project manager, has identified the project's long-term goal and their activities as «changing behavior and attitude to the problem» (O4: 55).

Alla Riazhskikh from the public organization «Successful City Mykolayiv» said that their activities began in 2016. She received a request from Senkevich A., mayor of Mykolayiv to hold an international investment forum, «take the mayor's seat and win the election race» (O3: 45).

«We created the «Successful city of Mykolayiv» a few days before the forum, as we already had a team of like-minded people. Since the forum went well, Alexander Senkevich suggested to further develop this topic, and the main topic was «Construction of a waste processing plant in the city of Mykolayiv». (O3: 47)

40 participants attended the forum, 25 of them are Ukrainian enterprises and the rest were representatives of international enterprises. As a result of the forum, a memorandum was signed stating that they and the city were ready to cooperate. As a result, their initiative group developed requirements for investors to build a plant subsequently and developed a regulatory framework in 2016. However, later, as the respondent says, when they wanted to transfer the forum's results to the authorities, they faced global opposition.

«The fact that we now have an excellent legislative base in Ukraine, for example, the «National Waste Management Strategy». I am very sorry that now everything is breaking down like that. I am looking through these laws, for example, 2207-D, and I understand that there is so much corruption and, most importantly, nobody will accumulate all this.» (O4: 47)

The motivation to engage in educational activities in schools and universities stemmed from the growing realization that there are not enough specialists in this field and that they need to be nurtured.

#### ***4.4.3. Approaches and Methods***

This section will analyze the methods, approaches, and tools companies and organizations use in their environmental education activities. The respondents were asked to describe how they interact with students, how they motivate them, and what topics are covered in the learning process.

Both companies interact with their NGO partners to implement their eco-educational projects. An expert from the first company (C1) argues that the company cannot work directly with children for a number of reasons. Firstly, this is due to the «under 12 marketing policy», that is, they do not target children under 12 years old in the European and Ukrainian markets as their primary consumers. They target those people who can already make an adult decision and decide to consume products. Secondly, according to the respondent, their company is a manufacturer, but is not expert in environmental education and education in general.

For this reason, they are looking for partners who share their views and can devote more time to this. In turn, they are ready to invest their resources. Basically, the projects' task is to give, through lectures, training and workshops, a basic understanding of the problematics and the tools for how to solve the problem. Then they can return to their community, for example, and try to solve the problem there. After that, the company waits for feedback - whether the methods and tools they used worked or did not work.

The representative of the second company (C2) describes his methods and approaches in environmental education as a set of activities. At first, in partnership with NGOs, they conducted training that explained to children why it is necessary to sort waste and told them how to do it. The next stage after the pieces of training, as a rule, was a marathon, that is, there was a one-day or two-day event, in which they, together with the students, collected waste to consolidate knowledge in practice.

«We realized that this would not give sustainability. The fact that we will periodically conduct these trainings will still remain a theoretical component. Here we went further. Work was carried out with the authorities and containers installed in each school for children to do this every day to form, train and reinforce this skill.» (C2: 16)

Another problem arose in the process. When a provider company arrived, which was supposed to pick up the waste, they found themselves in a situation that the waste was not sorted qualitatively, and accordingly, they could not pick it up. There was also some resistance from school principals and school technicians who did not want to optimize this process. As a result, it was decided to form a school asset and create a new direction of eco-patrol - «these are activists in the school who are initiators, active people who are implementing these practices» (C2: 17). Among their activities is the shift duty to explain how to sort correctly during the process. There was also a competition called Best Environmental Practices. Each school shared how they manage to involve the school residents in this process. Among them was work with the parent committee, organizing events, organizing charity fairs. Children had to come up with a whole range of activities.

«Here they learned to manage, learned to achieve goals, learned to look for helpers, to involve, to motivate. It has become a leadership course. (...) Children must learn to take responsibility for themselves. Then we understand that theoretical knowledge turns into practical; they find their own tools and their own solutions.» (C2: 17)

The competition's objective was to turn theoretical knowledge into practical knowledge so that children could find tools and their own solutions.

Aratovska E. from «No Waste Ukraine» says that in addition to lectures, they also conduct excursions at their marshalling yard: «we talk about values, and about arguments, and about which plants recycle, and what is produced from recycled materials» (O1: 25). For example, they demonstrate how fabric is made from recycled plastic.

«They [students] always need to go outside the school to get new information, so our stations are a kind of science museum only for sorting garbage.» (O1: 26)

The respondent identified the basic arguments that they voice during their lectures and excursions for schoolchildren (12+). The first argument is the rights of people: «we tell where the garbage goes, and this is outside the city, where there is a settlement, near which there is a landfill where people live, children, and they are hostages of this problem» and «children cannot go out to

breathe fresh air». In general, the first argument includes the information that human rights of life are violated and that there is a threat to human health due to low-quality air, water, etc.

«For example, if a landfill is on fire and someone is holding a cow or a goat, then everything will be contaminated with dioxins. It is very harmful, it causes allergies and cancer. That is, we say that every day the constitutional rights of another person are violated. Just because we didn't know or didn't want to know what was going on.» (O1: 27)

The second argument is animal rights. In this context, they talk about how animals confuse garbage with food; animals get entangled in plastic and get sick. The garbage in the rivers also pollutes the entire food chain: «this fish then gets on our table, and the fish absorbs mercury and these heavy metals are not excreted from the body» (O1: 27). The respondent says that they show pictures of animals to show how they can be influenced by human behavior, but «even if some «scary stories» appear, we must cultivate empathy» (O1: 27). They also talk about the importance of the ocean and the balance of the eco-system.

The third argument is that we have many processing plants in Ukraine. Within this topic's framework, the NGO shows five videos about the processing of glass, plastic, paper, metals and combined tetrapack packaging, which they made themselves in agreement with the factories.

«We tell them that these factories buy garbage abroad because in our country, there is no sorting culture, and our garbage ends up in a landfill. This doesn't seem right because it can be sent to the factory to not waste money, to not litter the landfills even more.» (O1: 28)

The next argument is that «we are adults» (O1: 28). This argument is more for office staff and different teams, for which they also conduct lectures and pieces of training. It means that «we should not behave childishly» (O1: 28), that even if the state has not created a system of the separate collection as in other countries of Europe, this does not mean that it is impossible to minimize the generation of waste, sort it and take it to sort stations.

NGO «Let's do it, Ukraine» also uses an integrated approach within the framework of environmental education because the «School Recycling World» project provides for a systematic approach to waste management in educational institutions at the state and regional levels. The school marathon of waste segregated collection motivates students to obtain a personal profit, as already described in paragraph 4.4.2. Besides, the organization holds the All-Ukrainian Festival of Social Advertising among students in a competition format. There is also a motivational and

incentive event like the Eco School Awards - a rating among institutions of general secondary education and an ecological camp for student government School Recycling leaders.

The School Recycling project envisages creating an «eco-patrol» at the school participating in the project. Eco-patrol is a team consisting of a leading teacher (coordinator) and 9 active students in grades 8-10. The team organizes the School Recycling project and all related activities are recommended by the organizers. It is formed for the duration 12 months with a possible extension of the activity for the next project period or until the end of the academic year. The team consists of volunteers who are ready to make their educational institution and its staff environmentally responsible to establish a system of proper waste management and respect for the environment by their example and actions.

Besides, within the School Recycling project framework in 2019, the training manual «Social responsibility and eco-culture» was created and published for participating schools. According to interviewee's words, «Green Pack», the environmental education toolkit to schools provided by OSCE, was used as a reference creating the training manual (O2: 44). It contains information and educational content, practical tasks related directly to the goal of the project to teach how to sort waste, and recommendations on how to change your lifestyle and consumer behavior. For example, the 5R rule is described - refuse, reduce, reuse, recycle, rot, and by following which, «you can get closer to ecological life» [School Recycling Training Manual 2019: 29]. Besides, there is a paragraph «Eco-tips» which include: «Be a wise consumer», «Do not buy trash», «Avoid disposable plastic bags and dishes», «Sort trash», «Save water», «Save energy», «Before purchasing, pay attention to the economy of technology (marking A, A +, Energy Star)», as well as many other topics about nutrition, cosmetics, transport, etc. [School Recycling Training Manual 2019: 23-25].

Julia Markhel characterizes her approach in the educational projects Let's do it, Ukraine and School Recycling as well as personal motivation:

«There is a lot of theoretical material on the Internet, a lot of organizations and movements simply provide training on sorting and labeling, but no one explains why I am doing this. Moreover, at this moment I always give a personal example, because having traveled to 48 countries in the last four years, I wouldn't say I like living in a dirty world.» (O2: 37)

The NGO Let's do it, Ukraine, among other activities, also organizes World Cleanup Day every year for any age group. The event's general idea is to help people notice the global garbage problem in the environment, reduce pollution and not create waste that will litter the Earth.

Project manager of «Zero Waste School» Teremta V. described the different approaches they used in their three-day training. At first, the teams learned during the Active Citizens training from the British Council to interact within local communities and negotiate mastered ways of solving difficult situations and communication methods.

«We worked with participants on values and discussed what values they have, making it easier for us to interact to relieve the tension they come with and remove this regalia in terms of principal and teacher.» (O4: 53)

The second day is devoted to project management, which is divided into four modules. Then the participants presented their ideas of what they plan to do in their community. The third day is dedicated to fundraising and lectures from eco-leaders: «we analyzed what organizations exist and that their community has a local budget, because few people in schools know that you can come up with a project and get 2 million hryvnia [currency in Ukraine] for it to solve some problem» (O4: 53). The task of participants from 50 selected schools was to implement their projects already in their communities and achieve the KPIs that were set by the Zero Waste School team: «Our KPIs looked like: they would confirm waste collection, so that there was a report, for example, with receipts» (O4: 54). As a result, they selected the top 25 participants and equipped them with a garbage press. Besides, after schools have learned how to collect and hand over second raw materials properly, they accumulate funds and use them to purchase the necessary equipment in schools (for example, microphones, benches, trees): «When they know that this is the result of their activities, they receive colossal pleasure.» (O4: 56)

In addition to trainings and workshops, the participants were provided with materials with the help of which they could conduct a lesson in their schools. They received posters about sorting, about the current state of the environment, and about composting in the form of infographics.

Besides, Teremta V. says that they thought of a long time to reach as many participants as possible and decided to create an online educational platform, «Ecoacademy». This is a 25-minute online course on the path to zero waste and an opportunity to familiarize yourself with the thematic words: sorting, recycling and composting. On its website, Ecoacademy is positioned as «a step-by-step guide on how to become eco-friendly, save our planet from a big garbage patch, be conscious about things and cultivate eco-habits» [Ecoacademy Official Website]. The online course

consists of five lessons: «What world do we live in?», «Features of sorting», «Minimalism», «How are they not afraid of plastic?» and «Ecoactivism».

«We wanted to make it short, but very meaningful. That's why after each lesson we have information materials, they are very cool.» (O4: 56)

There are links to useful sources after each topic; for example, the IQAir website helps to monitor air quality locally. There is also a link to the «Sort» smartphone app - an assistant with tips on waste disposal, or a link to an online map where you can find the nearest stations that accept of secondary raw materials.

Alla Riazhskikh from the public organization «Successful City Mykolayiv» told that with the money raised after the investment forum, they decided to conduct training for school teachers in Mykolayiv. They invited the eco-expert Aratovska E. from No Waste Ukraine and purchased the first cardboard boxes for sorting waste for schools. As a result, 2 pieces of training for teachers were organized, and «then after about two months, the first cardboard boxes for sorting waste came and we put them in 34 schools» (O3: 48).

#### **4.4.4. Challenges**

This section presents the interviews results that answer the question of what challenges or problems public organizations and companies face during the planning and implementation of their projects in the field of environmental education. Conditionally it was managed to divide all the challenges from respondents' experience into the following groups: project and students, project and teachers, project and director and operating staff, project and government, project and adults (parents), project and contractor, and finance.

In the beginning, students in schools did not immediately learn to sort because it is a complex process and it entailed several other difficulties: «the challenges were at all stages and the students had to learn to sort correctly so that they would not have to re-sort later» (C2: 17). Besides, one respondent said that they encounter skeptical students, but find solutions for this situation: «Older children may be a little skeptical, but we try to position them, joke, and do not pretend to tell such important stories (...), on the contrary, we try to be friendly and involve schoolchildren in dialogue, so it is possible to find interest in their eyes» (O1: 28). One respondent noted that if we talk about the challenges and difficulties in the process of their work, «children are the easiest link, because you explain to them and they understand everything» (O2: 38).



Regarding the work of projects and teachers, there are many comments from all the experts, who are unanimous in the notion that it is difficult to cooperate with many teachers. It may happen that teachers are not interested in spending more of their working time on additional projects in the field of non-formal education: «sometimes they say that this topic is a burden to them and that no one pays them for it» (O2: 39). Some teachers prefer to spend time on other subjects, arguing that they already are included in the compulsory curriculum. In the context of the relationship between children and teachers, there are difficulties: «they [the children] often do not find support in school, so we try to keep the teacher in the team» (O2:38). One expert said that during lectures and preparation for lectures at the school, they noticed that «teachers expressed negative comments among themselves» (O1: 28) about their activities.

«Unfortunately, there are «few valuable» people in schools. There are often adult teachers who are fed up, cynical, skeptical, who may not like their work.» (O1: 28)

Respondents insist that not all teachers do not want to cooperate, but still, those who are not interested in cooperation or participation in projects are called «inflexible» and not motivated.

One respondent said that as part of the project, they found that principals in some schools did not support students in implementing their project ideas which they had to implement in their communities. Therefore, they decided to invite students and teachers and principals to their training next year. This affected the number of applications because «about a thousand participants were eliminated at once, since it is difficult to involve the director in project activities» (O4: 53). The following year, they faced another challenge - the «passivity» of principals.

«We noticed that the directors were quite passive when working with the coach and did not want to answer questions because they did not want to show that they did not know something. Of course, from the perspective of psychology, this can be understood, they do not want to seem incompetent in any topic, because they are new to this field.» (O4: 56)

Another respondent commented on their relationship to school principals as follows: «Most principals were aware of these changes, some might say, I quote, «We are not cleaners and why should we do this?» (C2: 18). The next respondent said that some school principals justified their refusal to cooperate by saying that it was not part of the main school curriculum and, again, that they did not have time.

«We will not do it, it is not a priority. The children are so busy, the teachers are busy, so why do we need it?» - they say, and this is the most difficult moment for us.» (O2: 39)

A representative of the NGO said that there were cases when they provided tanks for separate garbage collection, and «they did not even unpack them» (O2: 39).

As for the operating staff and their influence on the educational process, «operating staff in schools first opposed the new garbage collection system in the early stages, because for them it is additional work - instead of one ballot box there were four» (C2: 17). For the first time they had a negative impact and made sure that this process did not take root.

«The operating staff lives their separate lives from the school. In some schools, this staff is beyond the control of even the principal. Cleaners can carry all packs in one tank. Sometimes neither the students nor the principal can handle this cleaner. It is difficult for the elderly to accept the new system. It is more a problem of communication of school management with the personnel». (O2: 39)

Since there is no systematization of the process of control by the school management in some cases, the following problems arise with the contractors who have to take the sorted garbage for recycling. If the waste is not sorted correctly, it will not be collected. If the process is disrupted, it demotivates children: «The chain where the contents of these tanks then go is significant. As soon as the children saw that it was an imitation, that it was not true... That's it! We have lost the sequence of sorting garbage» (O1: 25).

«The biggest problem today is our contractors, who have to export recyclables» (C2:18). The expert will say that since the country does not yet have a law «On Waste Management» and this process is not regulated at the legislative level, now this process is very chaotic and it depends very much on the situation in the environment. «When European sorted garbage came to us recently, and China introduced a ban on receiving European garbage in 2018, it started coming to us for free» (C2:18). Thus, processing companies have lost the economic incentive to take and recycle raw materials within the country. They used to take, sort and receive some income from recycling and cover their logistics costs, but now European recyclables come for free. The expert says that the government should already intervene in such a situation: «This is a moment that does not depend on us. Here the state must settle these issues. Therefore, there are many difficulties, for example, the lack of infrastructure» (C2: 18).

As for other difficulties faced by the organizers of projects in environmental education, one of the experts told about one case from their experience, in which it was not possible to estab-

lish a dialogue with local authorities. The company with their partners worked on methodological materials on environmental education. It was for several levels - for elementary school (1-4 classes), for the middle school (5-9 classes) and for high school (9-11 classes). The point was to improve environmental education in children. It was a recommendation. First, they wanted to test it locally in schools in one district, then get feedback from teachers and students. Its volume was about 10 hours per semester. The process of negotiations with the authorities looks like this:

«We made and handed them [methodological materials] over to the local authorities and asked them to help test the material and get feedback on how it works in schools and whether it works at all or not. After we handed one part to regional authorities, the next level was the district level. Then the district authorities said they should ban it. Why? Because «give us better». We say there are no problems. We wanted to test locally at ten schools to make adjustments, see problems, and feel the gap... They insisted that we share with them. As for copyright, we were not against it and gave the material. After that, the ministry addresses us and says that this methodological material needs to be approved by us. We didn't want to do it without a test, we just wanted to see how it works. Well, because of the bureaucracy, because of many of these levels, this idea just died.» (C1: 7)

In such cases, to some extent, bureaucracy slows down the process. However, besides, there is a lack of transparency of information on how the initiative group can achieve its goal if there are a desire, prepared materials, and a vision of how the system of environmental education and education in general can be improved.

Another problem is financing. None of the educational projects that interviewees represent are funded by the state. The private sector, represented by companies, provides sponsorship to NGOs and helps them achieve their goals since they are non-profit organizations. An NGO representative says that resources are not always enough to realize what they want: «This project can be done on enthusiasm, but in any case, resources will be needed, (...) buy sorting bins, (...) besides, we need technical and human resources» (O2: 38).

There are cases, for example, when, on the contrary, local authorities are interested in getting some kind of material and technical support from NGOs and their projects. The respondent told about such a case in the urban-type settlement of Verkhovyna, when they made a large project Zero Waste Toloka and, in general, helped in the eco-adaptation of the entire settlement, carried out eco-patrols with students who know about sorting. Then they received a specific grant and turned to self-government bodies: «Of course, first they ask «what will you give us?», «Buy tanks?», «Buy a sorting line?», but when it comes only to an educational project, then we cannot give any of

this» (O1: 31). According to the respondent, it is much more interesting for human settlements to receive technical support (equipment, tools) and the local authorities themselves are asking for it.

«It is more important for them to receive something material, but it is clear that they are also ready for this, and in the process we are installing internal sorting bins for the premises, we provide posters, we do informational and educational work, which is also needed.» (O1: 31)

Another point in the context of the question of what challenges the organizers of educational projects face, which was mentioned more than once in interviews, is adults' attitude (parents). A company spokesperson says that, in general, many people are skeptical about their social contribution as a large multinational company and the way they try to work with communities, «therefore this [educational activity] is less effective» (C1: 6). A representative of another company says that most people are convinced that the situation in the country will remain the same and do not understand why to make efforts: «When we started talking about sorting in 2016, it is clear that it is very difficult to reach adults because they say - «So you sort out a certain amount now, so what will we change?»» (C2: 15). The older generation is not ready to change their habits, for this reason already trained children may face disapproval from their parents within the same household:

«We even had a story when a TV channel filmed about a boy who, after our lecture, began sorting plastic bottles at home. And when the parents threw something into the rubbish bin, he said that they cannot just do in this way and that he would take it for recycling, dad told him «Are you a garbage man?!» (O1: 28)

With such a phrase, an adult with a certain mentality devalues the child's work. It is very important to explain to the child that sorting and taking care of the environment that «this is not to be somehow disadvantaged, but this is about culture, high intelligence, critical thinking and about the future, because your peer from the EU, Japan, America, sorts waste and is not ashamed of it» (O1: 29).

#### **4.5. Partnership and Financing Mechanisms**

The chapter 2.3.1. shows how the mechanism of financing secondary educational institutions in Ukraine looks like in general. It turned out that there is no separate funding for environmental education in the formal sector. However, as follows from interviews with experts, there are examples of other financial opportunities in grants and projects. Besides, this chapter

details the cooperation between the involved stakeholders: participation and role of the state, local and regional authorities, private sector and NGOs.

Concerning the formal sector, in paragraph 4.4.1. the school principal from Kyiv gave an example from her own experience of taking advantage of the «Public Budget» opportunity and continuing to participate in the selection. They put forward a new project for a vote: «The next year, we came up with a park area with frames that can humidify the air, a pole with solar panels from which you can charge gadgets and where there is a button to call the police, fire department or ambulance. The residents of Kyiv must vote for this project, and then it must be approved» (P2: 72). This electronic platform was created under the Swiss-Ukrainian program «E-Governance for Government Accountability and Community Participation» (EGAP), implemented by the Eastern Europe Foundation in partnership with the Ministry of Digital Transformation of Ukraine and funded by Switzerland. This platform is a positive example of how the community can interact with the authorities. There is a separate «School Public Budget» in some cities since, during the implementation of projects, there are certain disputes regarding the general availability of facilities.

When the participants were asked how she characterizes their cooperation with local and regional authorities, the answer was:

«In this regard, it is difficult with the authorities. Public organizations, yes, they really help, but to say what the authorities did in this regard, specifically for environmental thinking - no.» (P2: 73)

«You know, I don't want to say anything wrong about the authorities, but I cannot remember so quickly that the authorities initiated ... the only thing there are grants from the mayor. He has several nominations, and everyone who wants to take part can offer his own project; maybe it can be ecologically directed.» (P3: 80)

In the context of the discussion of financing environmental education in secondary educational institutions, the school's principal indicated that their budget is somewhat limited, and there are other problems related to the improvement of the school, health and hygiene of students, which need to be addressed first. Thus, environmental education is not a priority.

«I have a limited amount of resources and water allocated for the school. This is one reason why. There are not enough funds to equip the premises for greater comfort for children, so I cannot think of anything else until I do this. If our toilets are not cleaned, or the roof is leaking. (...) We were told at the work meeting today that we should keep in mind that there is so much money for the school we received this year, although it is not significant funds, next year we will not get anywhere.» (P3: 82)

As mentioned earlier, schools actively cooperate with public organizations and take part in their short-term or long-term projects in environmental education. Representatives of public organizations and companies were also asked how they can characterize their cooperation with local and regional authorities. The majority commented that the regional authorities, in most cases, do not show initiative on their own, and some even called it «passive»:

«The regional government takes the position «I make a decision - yes or no». There are more active communities. By community, I mean local authority. (...) in most cases the regional authorities are very passive. If not passive, then it interferes.» (C1: 7)

«We are always the initiators, but if there are already some connections and partnerships and understanding from the other side, then it's good. Often it is «do it if you want», but they may not participate, they just do not interfere, if we talk about power.» (O2: 40)

However, in most cases, they notify the local authorities about their plans and projects focused on schools since schools are public institutions. Besides, it was noted that if the project enlists the support of local self-government bodies, then schools are more willing to take part in them, since, nevertheless, the authority of the local government plays a role: «Of course, we cannot do anything without power, and it is ugly to go to the director, without telling the education department of that city or area what we're up to, because it's like jumping over your head. You will always receive more support if you notify all participants in this process of your intentions in advance» (O1: 30). Some respondents gave examples of both negative experiences of working with local self-government bodies and several positive examples.

The representative of «Let's Do It, Ukraine» said that they always contact local authorities and write a letter asking for information and organizational support. They stage a working meeting with representatives of government, education, journalists, and members of the organization, with one of the bosses or contractors involved in the removal of recyclable materials.

«If this happens in the city administration, it is taken seriously. For example, the mayor of Mykolayiv's city was at almost all the events that we asked for; moreover, he also initiated the state budget creation so that the tanks appeared.» (O2: 41)

The interviewee clarified that they started working with the PepsiCo company and received funding from them for 13 out of 70 schools, and the Mayor was in charge of the rest. The company could not allocate the necessary amount of money, which is several million hryvnias, and

carry out the city administration's work. Besides, for example, the head of the village in Meshkovo-Pogorelovo was very active and took on the project coordinator's role. They created an award to motivate schools. When there was no place to take recyclables, he initiated a utility company, they bought a small pressing plant, and they started buying recyclables from their schools. Regarding a not very positive example of project implementation, this is work with schools in the city of Vishnevoe in the Kyiv region: «we met with the mayor's office of the city of Vishnevoe with our project, but for them it was not relevant at all, and then we did not have a local coordinator to work with them permanently, and they did not have a contractor to take out the garbage» (O2: 39). It was not profitable to export to Kyiv, since there were high costs for logistics, and «this is no longer the money that could motivate the principal» (O2: 39). Nevertheless, NGO representatives communicated with the administration and came to conduct pieces of training at schools, but the project did not fully realize its goal: «I come, sorting bins are on the street, there is ordinary rubbish [not sorted], and that's all» (O2: 40).

For example, a representative of «No Waste Ukraine» shared her work experience in different settlements in Ukraine and talked about where and what kind of financial and institutional support she received from partners. In Khmelnytsky, it was a local company that prepares recyclable materials. They purchased school tanks for 50 schools. Each school received 10 boxes - the necessary starter kit to start sorting waste. They also delivered containers on the territory, that is, it was with the local business's support. In turn, No Waste Ukraine held lectures for teachers and delivered a presentation for children. Besides, they had lectures in the Mykolayiv region. There they carried out their plans with local authorities' support, and the Pepsi company also joined them. In Chernivtsi, the Coca Cola company provided lectures and materials for all schools (there are about 50 of them). In Kyiv, they provided lectures and materials to 100 schools with the support of Carlsberg Ukraine. The respondent emphasizes that «they [the company and the students] did not communicate in any way, since this company is associated with beer; although they also have carbonated drinks, kvass, but we did not mention this brand in any school, they only pointed in their internal corporate social responsibility reports that they supported our organization» (O1: 29). Also, the company «Yagotynske» supported them financially. They financed about 45 excursions for schoolchildren to their marshalling yard. Verallia, a glass processing company, also provided financial support. Besides, a grant from the British Embassy was used to work with schools in the Khmelnytsky region. Thus, in most cases, packaging companies act as donors. The sponsorship should be anonymous and should not look like a marketing campaign, so the respondent commented on their collaboration with manufacturing companies as follows:

«We never talk about brands here and we do not have the logo of our sponsors hanging anywhere. We think it is vulgar when it is shown who was their sponsor for the tour. This is such a modest contribution of the company to smooth out any negative impact.» (O1: 25)

As for the public organization «Successful City of Mykolayiv», which was created on the initiative of the mayor of Mykolayiv, a representative of this organization answered the question about who provides financial or technical support in the following way: «We work as volunteers. Only for our funds» (O3: 50). Paradoxically, it is difficult to call their cooperation with the local authorities productive. The organization was developing a waste management program, and when they had already streamlined and brought these rules into one document, «then our mayor was impeached and this issue hung up, and after the impeachment [six months later, by a court decision, Senkevich was reinstated] he did not want anymore to return in this form to this topic, so we got together, decided not to leave this topic, but to move on our own» (O3: 48).

As for the companies, as described earlier, they provide not only material support but also engage in «intellectual volunteering»: «When we work with an NGO asset together we develop a project, define tasks and together develop strategic planning, that is, we help them in the formation of such projects» (C2: 20).

#### **4.6. Formal Environmental Education vs. Non-formal Environmental Education**

This chapter presents the interview results that answer the research question of which type of education could play a more significant role in forming environmental awareness and the strengths and weaknesses of formal and non-formal environmental education in Ukraine. Besides, the interviewees were asked whether there is any perspective that their contribution to non-formal environmental education will be integrated and become part of formal environmental education.

##### ***4.6.1. Strengths and Weaknesses of Formal EE in Ukraine***

Strengths	Weaknesses
«an appropriate basis» stable complex permanent theoretical	lack of time for practice lack of practice uniformity in approaches and methods lack of teacher qualifications lack of funding



Concerning the strengths of formal environmental education at school, some participants expressed the belief that this is an appropriate basis for children both in primary school and high school because the modern school curriculum covers such natural sciences as physics, biology, chemistry, astronomy and geography. Regardless of whether the school specializes in natural sciences, students receive a holistic view of the world and a specific knowledge range in these scientific areas. Besides, the subject «Biology and Ecology» includes several topics that correspond to the modern agenda: «Education is being transformed and suggests that a person must study independently. A person gets some basic understandings, and has to explore or work on some direction more by himself» (C1: 8).

Besides, formal education is stable and comprehensive, which is an advantage: «Since this is a public institution, we win here, in principle, formal education in our country goes from the first grade to the very end; besides, children receive a certificate, and also formal education. It is not divided separately into environmental education, it is education in a complex» (P1: 64).

As one interviewee said: «A big advantage is that the state has paid attention to this. If before the introduction of these changes [NUS], (...) there were only 0.5 hours for the lesson [«Biology and Ecology»]. It was a lesson once every two weeks. Now it is 2 hours a week.» (P3: 81)

According to experts, the main weakness is the insufficient amount of time for a practical teaching method or even the lack of a practical approach within the framework of formal education: «less time for practice, less time for honing some practical skills, or it should already be some kind of specialized school, if we take environmental education as a whole» (P1: 65). It leads to another mentioned disadvantage - insufficient funding «so that children can conduct tests and experiments» (P1: 65).

Most of the time at school is devoted to the study of theoretical material, which indicates another drawback in the opinion of the respondents, namely the uniformity of approaches and methods in formal education:

«Ecology teachers are cautious about this practical part. Here the teacher is in a very constrained framework. The teacher cannot organize, for example, an eco-trip with forest cleaning, as some parents may be against it and it will be like a compulsion. And in public organizations, children take part voluntarily in such events.» (P2: 74)

Concerning teachers and their work, some respondents expressed some criticism in this regard. According to the interviewees, formal education is partly represented by «old school»

teachers, «who do not pass the new qualifications and only talk about what is written in the books. They don't do their personal research to share. In particular, it is perceived by our students as pessimistic and not interesting» (O4: 57). It also highlights the uniformity as mentioned above. Besides, there is a question not so much for teachers, but for the very system of retraining of teachers following the new agenda and the new educational reform:

«Even after the course «Ecology» was introduced into the curriculum, they did not bother and retrain teachers. We decided that a biology teacher could introduce a course in ecology, which is a separate science, a separate subject.» (P2: 74)

However, another respondent is much more concerned with the statement that formal education is very bureaucratic in Ukraine: «If in some countries some changes take six months, in our country it can last for decades, and while these changes are taking place since the world is changing very quickly, it becomes irrelevant again» (C1: 9).

#### ***4.6.2. Strengths and Weaknesses of Non-formal EE in Ukraine***

Strengths	Weaknesses
practical approach entertainment diversity well motivate foster the soft skills easier to perceive	impermanent, instable, selective, chaotic incomplete coverage dependence on sponsors limited time limited resources

The majority of the respondents expressed the belief that one of the main strengths of non-formal environmental education is its practical approach. The hands-on method includes the laboratory method, the exercise method, the hands-on method, and the game method: «by gamification, even some complex educational processes, we can achieve our goal much better and present information more effectively» (C1: 8). Besides, in the framework of non-formal educational projects, such type of educational work as excursions is used, in which training is carried out in a natural or industrial facility outside the school boundaries. The tour is also one of the interactive teaching methods. All these approaches, according to experts, are of greater interest to the younger generation.

Besides, it was also noticed that children are interested in the appearance of «new faces» at school and are more willing to accept information from non-formal education representatives: «The young people who come speak the language of young people, so they like this communication. It is an equal conversation. Our contingent of teachers is aging and environmental education has not always been the conviction of those people from a young age, so they cannot explain this problem to children now» (P2: 73).

Diversity is also one of the strengths of non-formal environmental education: «teachers and trainers from different public organizations have their approach to teaching» (O4: 57). Besides, they manage to motivate students well. As one of the respondents noted: «participation in a certain project always implies some competition and the result, and of course some rewards later» (P1: 64).

In addition to specific knowledge, participation in projects within non-formal education framework contributes to developing soft skills in the younger generation - teamwork, communication skill, leadership skills, problem-solving, critical thinking, creativity, responsibility, and it broadens the mind in general.

As for the weaknesses of non-formal education, most interviewees expressed the point of view that they are to be seen in the inconstancy and instability of such projects. To maximize efficiency, «non-formal education must also be systemic» (C2: 21).

«Very often, there is an enthusiast who will work on a project for a year, and then he either gets tired or family circumstances and the end. It cannot be effective if you don't polish it like a stone from year to year.» (O2: 42)

Besides, educational projects in the field of environmental education do not cover all schools in Ukraine, since participation is voluntarily, the information may not reach the potential recipient (school principal, teacher): «it is not a fact that this public organization offered participation to all schools, there are many schools that do not receive the information» (P2: 73).

In turn, some schools are also denied participation in projects due to limited resources by public organizations in some cases, since educational projects depend on sponsors and donors, «therefore, if patrons and sponsors stop funding, then there will be no projects» (P1: 64). Resource constraints lead to time constraints: «the participants tell us they don't have enough time» (O4: 58).

One of the school principals described the weaknesses of non-formal education in the following words: «episodic, selective, chaotic, unsystematic» (P1: 74), which sums up the shortcomings of non-formal education in Ukraine as mentioned earlier.

One of the respondents, a business representative, noted that it is essential to know the audience to work and choose the right object for interaction.

«If non-formal education did not come to the right recipient, then this may not be a response, but merely even negative. Moreover, when informal education comes with an unprepared and untested solution, such a good initiative can stop.» (C2: 21)

In this context, it is worth adding that «in some schools, for example, non-formal education is not taken seriously» (O4: 58).

One of the important disadvantages or it can even be called a risk, is the risk of violating ethical norms when working with children of different ages. «Perhaps people [representatives of non-formal education] may not be tactful enough, and they can impose their topics that are not included in the same age-specific psychological characteristics of children» (P3: 81).

Determining what kind of formal or informal approach plays a more critical role in environmental education is impossible to answer unequivocally. The approach must be comprehensive.

«If formal and non-formal education goes together, then there will be a result, because, for example, to engage in purely non-formal education, the same waste collection and separation is good, but when you explain to your child why and why we are doing this. Who will do this? Therefore, one complements the other.» (P1: 64)

Considering the formal and informal sector's strengths and weaknesses, for example, as lack of practice in one and the presence of in another, or the stability and constancy of the formal sector and the chaotic and episodic nature of non-formal education, it makes sense to discuss their synergies.

#### ***4.6.3. The Perspective of Integration of Non-formal EE into Formal***

The next question asked the informants if there are any prospects for integrating the approaches and methods of non-formal environmental education into formal education, and if so, what first steps need to be taken for this. According to the interviews' results, the majority of respondents from the informal sector indicated that this is possible and that this is the future.

As for the methods and actions of how this can be done, one of the respondents from the private sector indicated that it is necessary to formulate at the state level what is «non-formal

education». However, as described in chapter 2.1.2. in article 8 of the Law of Ukraine on Education, there is a definition of «non-formal education». Another question is how seriously the state and society take this educational tool as a whole: «it is necessary to explain what this concept is, its role in education and how to use it as a toolkit. It should be adopted at the level of the state, the Ministry of Education and Science. They must communicate with representatives of formal and non-formal education in order to understand how it works in general» (C1: 9-10).

Another company representative said they have plans to develop a training manual for 17 hours for a teacher at school: «We wanted to offer a course that would include both practice and theory. This will of course need to be tested and see how it works. I know that our activists have worked with the Ministry of Education to create just such a course, but this manual is not yet available» (C2: 21).

The representative of Let's Do It, Ukraine speaks about the first steps in the context of integrating non-formal education into the formal as follows: «first you need to write a program so that it is implemented at the legislative level and does not stop the process so that we do not prove that this is important, but that it is really adapted as it may be in our realities» (O2: 43). The respondent also added that within the framework of decentralization, it became more difficult for them to communicate with schools, «since earlier, we could write a letter to the Ministry of Education and Science and they helped us to gather school principals who want to participate and implement this in their lessons» (O2: 43 ).

A representative of the Klitschko Foundation shared their experience and told about what they have already implemented in the context of this issue. In 2019, they created a curriculum for out-of-school environmental education, which they called the Eco-Community. The Ministry of Education and Science of Ukraine approved it. The program is entry-level and is designed for one academic year (4 hours per week). The curriculum covers the theoretical and practical components of training. In the learning process, the necessary theoretical aspects of the competencies are updated, and the acquired competencies are used in practice. Most of the training takes place through workshops and practical classes in which students can directly work out the skill that is being broadcast. The forms and methods of work on the program are group work, discussion, dialogue, watching videos, analyzing materials, group games, informing, explaining, examples, beliefs, solving situations, and the like. The final part of the Eco-Community program is the use of the acquired knowledge and competencies in practice by implementing the project. At the end of the course, students should know, for example, how to «work in a team, how to build a plan for creating a project, about the 5R concept, about composting organic waste, about recycling and sorting waste,

about upcycling, etc.» (O4: 57). The critical point here is that the program was created for out-of-school education. It means that it is not included in the official school curriculum but can be recommended, used by the teacher in the lesson, or, if desired, to voluntarily create an environmental-naturalistic course.

For their part, the school principals said that integration is possible since the school and the teacher have autonomy. As mentioned earlier, the school has a single state standard that teachers must adhere to, but each school develops curricula individually. However, there was some skepticism in words about the relevance of environmental education:

«It all depends on us, whether we need it or not, roughly speaking. We must set a goal and the most crucial question when setting a goal - what is it for us, why am I going to do it, what is the result, what do I want to achieve. Well, what will an excursion to the landfill give us? Well, absolutely nothing. Children will look, they will be horrified, and that's all.» (P1: 65)

Nevertheless, to the first question of the interview about the relevance of environmental education in Ukraine, the respondent answered affirmatively (results in chapter 4.1.) and emphasized the importance of this topic.

Another director demonstrated his openness to cooperation: «I would like NGOs to give recommendations on how teachers at school can explain the necessary information easily, interestingly and accessibly to the children, after re-reading a bunch of material, and watching a bunch of films.» (P2: 74) This is the school that used its autonomy and introduced the «Energy Saving» course into the school curriculum, not from the main curriculum.

«Of course, before the implementation, we had to talk a lot on this topic with the parents, because this is decided only based on the parents' statements if they give their consent. You see, some parents are better off with more math, for someone English is more important, so there were specific difficulties in working with parents. We are trying to convince them, and so far, we have succeeded.» (P2: 75)

#### **4.7. «Last Question»**

At the end of the interview, all participants were asked the same question: «If you had unlimited resources and opportunities, how would you organize environmental education in Ukraine?» Everyone answered this question with great enthusiasm, but the answers were very different.

The first transnational company representative would start with the modernization of the education system in Ukraine as a whole: «I would like, firstly, that our education corresponds to the reality of what is happening in the world» (C1: 11). Besides, students should have the opportunity, time, and resources in order to learn and devote time to their independent study: «they should be given «why to learn», «how to learn» and be given a resource in order to do this» (C1: 11). The respondent insists that education should provide practical skills: «we teach much theory, but in no way apply them in practice, and the practice is very different in many ways» (C1: 11). This argument refers to criticism that education at school and university does not meet the labor market demands. According to the respondent, this is a big problem for their company as a potential employer, so they are trying to nurture their staff for the future and explain to them why they need to take care of the environment and do it. However, they cannot be the drivers of this process until the government sees the future and invests its resources in it.

The second company representative is focused on his goal of responsible waste management: «if I had unlimited resources, I would create an infrastructure with sorting yards in all schools, in all districts so that people can do it normally conveniently» (C2: 22). The respondent also shared the idea of creating an interactive course for all schools, which will allow them to master this topic playfully.

One of the NGO representatives is focused on his field of activity, the culture of sorting garbage, and therefore he proposes to do visual excursions for children to explain what a linear system is. Given unlimited resources and opportunities, the respondent said that he would organize hikes, eco-camps, and farm trips so that children understand the value of nature. Besides, the teacher's work is not unimportant: «The teacher can offer to analyze our habits, which ones are good, which ones are bad. And collect these observations and how conditionally we can change them. Give some assignments for the children to watch. When they see the details, they know they need to change» (O2: 33).

One respondent said that it is necessary to learn from the experience of those developed countries that have already achieved specific positive results in environmental education. Provided there are unlimited resources and opportunities, and they would gather an international group of representatives of such countries. With such experts' help, they would start introducing eco-education not only in the capital but also in every village. It was followed by criticism that there is no equality between schools in Ukraine: «We need to create a program where the appropriate material base will be so that the teacher does not explain this on his fingers because they do not

have the Internet in the village. In Ukraine, there are still schools in villages where there are no computers and the Internet» (O2: 43).

Another interviewee supported the idea of learning from countries that have advanced on this issue as well. Besides, he expressed that he would not invest in the infrastructure of a still undetermined level of environmental education among the population, arguing that this would not yield results. The respondent said that he would rather invest in his education to share your experience with others in the future.

In their responses, school principals conditionally focused on what changes they could bring specifically to their school. These changes include, for example, complete technical support to provide all classrooms with multimedia and to be able to show related documentaries and videos. Also, put water filters for drinking water, reject the central heating system, and supply an alternative energy source. Besides, one director expressed a desire to create more «spaces with plants and trees where children can relax and socialize» (P2: 75). Another director replied that it is necessary to acquaint children with environmental projects through excursions and, in general, to tell students what organizations are doing in this direction. His principled position is that the school should not only be a center for learning but that the school should become a place for public communication and for solving specific issues, for edutainment and other levels of communication.

Most of the respondents believe that it is necessary to add more practice to the educational process and diversify educational approaches in the school. They would add more excursions and experiments, provided there are unlimited resources and opportunities: «take part in excursions, trip to the water treatment facilities. In August, our water always turns green, we could organize an excursion with an expert in this field, go to a pond, take a water sample to explain why this is happening, the picture should be clear» (P2: 68).

### ***Criticism***

This question reflects how the interviewees really relate to Ukraine's environmental education, how motivated they are, and how deep their understanding of this field is.

Even though this question was explicitly about environmental education in Ukrainian schools, some ideas were indirectly related to changes in the environmental education system, and some were not related at all.

Besides, there were answers about the technical equipment and the necessary material base and grants, which are now lacking in many schools for a productive educational process and equality, but the question itself assumed it already exists. Therefore, an answer was expected about



the next step, approaches, methods, themes, and tasks covering environmental education in Ukrainian schools.

Some respondents argued that they need to do more educational projects and need more grants for this, but the specific content of these projects, their purpose and objective, and what topics they want to cover, unfortunately, was not mentioned in some cases.

#### **4.8. Summary**

The analysis of the interviews in Chapter 4 showed that representatives of both the formal and informal sectors in environmental education recognize the relevance of this topic in Ukraine. They make it clear that the events taking place in the world and the country do not leave them indifferent.

In the field of formal education, experts assessed the current changes in the school system as positive. They find the competence-based approach according to the New Ukrainian School reform progressive and believe in its potential. However, directors are in no hurry to conclude transformations and innovations since too little time has passed. Besides, the respondents note as positive changes decentralization in the school system and teacher autonomy. However, teachers also need to be retrained according to the new standards.

Schools are eager to participate in educational projects offered to them from outside by youth organizations and NGOs and value non-formal environmental education. Representatives of non-formal environmental education, represented by NGOs and the private sector, started their activities related to educational projects for the young generation in Ukraine about five years ago (+/- 1 year). It was noted that the key themes of their projects are «Sustainable Waste Management» and «Responsible Consumption». Companies want to reduce their impact on the environment by attracting public attention and conducting outreach activities. One of the main goals of the business is to create the Extended Producer Responsibility system in Ukraine. NGOs are focused on waste management in Ukraine. This topic has always come to the fore during the interview process. NGOs, the private sector and interested schools are actively cooperating. Based on the experience of respondents and examples from their activities, we can conclude that the state, represented by regional or local authorities, does not always support them and often plays a passive role in these relationships. However, there were positive examples of interaction in the communities.

Formal and non-formal environmental education has strengths and weaknesses. With a certain amount of work on mistakes and reflection, they could effectively complement each other. Representatives of non-formal education have a desire to integrate their approaches into the school

system at the official level. In turn, some schools use their autonomy, follow the trends, and try to diversify the content of the curriculum according to their capabilities and the needs of children and parents.

## Conclusion

It was quite absorbing and inspiring to investigate how the education system in the general secondary school in Ukraine has changed and continues to change since I was a student at school ten years ago. I also liked the fact that all of the participants in my research were very interested in the research topic and warmly agreed to contribute to a more in-depth investigation of primary research questions. The purpose of the current study was to determine trends in the development of formal and non-formal environmental education in the Ukrainian school. In this qualitative research, nine semi-structured interviews with the representatives of formal and non-formal sectors were conducted within three months. Representatives of the formal sector, principals of general secondary schools in Ukraine, helped draw a better picture of educational policy and school involvement in environmental education. The informal sector is represented by transnational companies as well as non-governmental organizations and youth movements that are actively involved in non-formal environmental education in Ukraine.

General secondary education in Ukraine plays a significant role in forming personality, as it takes 11-12 years of a person's life. It is aimed at forming a personality, developing an interest in knowledge, and expanding one's horizons. General secondary environmental education is the main link in the environmental education system. This study set out to critically examine how representatives of formal and non-formal education raise environmental awareness and eco-culture of the young generation.

Today, the main among the legislative acts, which enshrines the conceptual foundations of Ukraine's environmental policy in the field of environmental protection, the use of natural resources, and ensuring environmental safety, is the law on «Basic principles (strategies) of the state environmental policy of Ukraine for the period until 2030» from January 1, 2020. According to this law, the main principles of state environmental policy are Ukraine's achievement of the Sustainable Development Goals (SDGs), which were approved at the UN Summit on Sustainable Development in 2015. According to this agenda, Education for Sustainable Development will establish a methodological framework and introduce continuing environmental education. According to the studied legislative framework and state strategy, the development of environmental education is expected by supporting the activities of out-of-school educational institutions, environmental-naturalistic centers, and centers for children and youth, and specialized public organizations.

This study has shown that the main changes in formal environmental education in Ukraine are associated with the long-term educational reform «New Ukrainian School», which has been testing in 100 schools in Ukraine since the 2017/2018 academic year. In 2018/2019, first-

graders began the education process according to this standard throughout Ukraine. According to the new standard, school education should form key competencies, the key among which is environmental competence. Environmental competence must be nurtured through cross-cutting themes that are embedded in every school subject. For primary school (grades 1-4), a new lesson, «I Explore the World», was introduced, which, among other things, integrates the theme of respect for the environment and the rational use of natural resources. A positive change is also the new format of the textbook «Biology and Ecology» for high school, published in 2019, which includes topics on modern environmental problems in Ukraine, Ukraine's environmental policy, types of pollution, and their consequences. Besides, the new textbook covers the concept of sustainable development, namely the UN Sustainable Development Goals.

Modernization of the education system in Ukraine provides for the decentralization and optimization of state administrative structures. One of the positive changes in connection with these events was the acquisition of relative freedom of the school due to the higher degree of autonomy. Schools have the opportunity to participate in educational projects proposed by the informal sector and, at their discretion, make changes to the curriculum.

The investigation of non-formal environmental education has shown that the private sector partners with NGOs and youth organizations. They provide support in the quality of material and human resources. Their collaboration aims to raise environmental awareness among the younger generation, teach a responsible culture of waste management, responsible consumption and critical thinking. The main motivation for creating projects in environmental education is the solution of the critical problem of the excess of non-recyclable household and industrial waste in the country and the lack of infrastructure for processing and disposal of waste.

In the framework of eco-projects from the informal sector, a practical teaching method is involved in most cases. Since the projects' goal is to teach the child to apply the knowledge gained and develop a skill, a competency-activity approach is used. It was just theory taught in short-term lectures in the early stages, but then the design work moved on to a practical approach and to solving specific problems. The informal sector used edutainment, training, workshops, excursions, marathons and competitions as tools that are very motivating and inspiring for children. Representatives of non-formal education try to explain the problems globally, conduct a discussion with students about preventing this or that environmental problem, offer to find a solution together, and teach how to give and receive feedback.

NGOs and companies face different challenges during the development and implementation of their environmental education projects. First, there is a certain skepticism on the

part of adults in the person of parents, teachers, and school principals, which can affect the learning process's effectiveness or not contribute to it at all. Mental differences and the difference between generations are due to the difference in life values and habits. The young generation is faced with a difficult task since basically a person adapts to the conditions and circumstances in which he lives. Concerning teachers, in most cases, if the idea of participating in an environmental project is not included in their value system, they are not motivated to waste their time on unpaid work. Teachers need retraining following the new educational standard. Besides, representatives of non-formal education faced in some cases the problem of communication with regional and local authorities, as well as bureaucratization. One of the pressing challenges is the lack of funding. Educational projects require technical and human resources. For this reason, unfortunately, projects in the field of environmental education cannot cover all schools in Ukraine.

During the research, I reviewed in detail the strengths and weaknesses of formal and non-formal environmental education in Ukraine. The advantages of formal environmental education include its stability and complexity. Students at the school receive a holistic view of the world and a certain basic knowledge in the field of natural sciences. The competence-based approach should also contribute not only to the development of environmental competence but also life-long learning, creativity, critical thinking, finding solutions to problems, etc. The main disadvantage of environmental education at school is the lack of time for practice or a practical teaching method. Most of the time at school is devoted to studying theoretical material, which cannot contribute to forming a specific skill in the child. Besides, there are still disparities between schools in urban and rural areas. Some schools in villages do not have technical equipment (computers, internet, etc.) and material resources sufficient to carry out a productive educational process. The lack of funding also manifests itself in urban schools, as the principal must prioritize and allocate money to renovate the school instead of investing financial resources in improving, for example, an environmental course.

The strength of non-formal environmental education in Ukraine is that their projects are extremely popular with children and are of great interest precisely because of their educational process approaches. A variety of activities and young trainers motivate and inspire young people. Besides, participation in projects within the framework of non-formal education contributes to developing soft skills: teamwork, communication skill, leadership skills, critical thinking, creativity, responsibility, and broadens the mind in general. The disadvantage of non-formal environmental education is its instability and selectivity. Unfortunately, public organizations' educational projects cannot cover all schools in Ukraine due to lack of funding, human resources, and time, since in most cases, these projects depend on sponsors and donors. The private sector cannot act as a donor

for all schools in Ukraine and, in general, this is not its task. One of the opportunities to get support from the state on a competitive basis is a grant. Sometimes grants are awarded by international organizations within the framework of various development programs. One of the disadvantages of non-formal education is that not all representatives of public organizations are experts in pedagogy, so there is a risk of violating ethical standards when working with children of different age groups. Some topics and teaching approaches may not fall within the age-specific psychological characteristics of children.

Therefore, it seems that one of the research questions, which sector plays a more significant role in the formation of environmental awareness in general secondary education, cannot be answered unequivocally. Weighing all the pros and cons, we can say that formal and non-formal environmental education complement each other. Students who participate in extracurricular learning and educational projects from the informal sector gain more insights and experience. This study's findings suggest that non-formal educators are committed to integrating their approaches and teaching materials into the school system at the formal level, but this naturally requires government support. So far, the school has played a significant role in the formation of basic knowledge about the environment, and extracurricular contests and projects have fueled interest in this topic. It is necessary to conduct more in-depth research to investigate what influences the younger generation's environmental awareness, and the object of qualitative research will be a sample of students themselves.

The following conclusions can be drawn after analyzing the goals, objectives, and methods of both sectors of environmental education: formal environmental education in Ukraine is, first of all, «education about the environment» because it contributes to the cognitive perception of environmental problems and the formation of this topic's fundamental concepts. Furthermore, non-formal environmental education is in essence more «education for the environment», as it includes tasks and goals for nature conservation. The classification as «Education in the environment» is equally relevant to both sectors. Any extracurricular activity that takes place through contact with nature is voluntary.

With this research, many lessons and facts around environmental education in Ukraine can be learned. The interviewees shared their experiences, citing many successful examples and cases in which they failed. Public organizations and companies reflected and learned from their mistakes, and step by step improved their projects.

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### **Interviews' list:**

C1: interview on 06.08.2020, via Zoom, total duration: 49:29 min

C2: interview on 30.09.2020, via Zoom, total duration: 50:43 min

O1: interview on 17.07.2020, via Zoom, total duration: 56:00 min

O2: interview on 29.07.2020, via Zoom, total duration: 69:23 min

O3: interview on 27.07.2020, via Zoom, total duration: 65:45 min

O4: interview on 09.09.2020, via Zoom, total duration: 61:16 min

P1: interview on 05.08.2020, via Zoom, total duration: 50:53 min

P2: interview on 28.07.2020, via Zoom, total duration: 60:17 min

P3: interview on 11.08.2020, via Zoom, total duration: 55:06 min

## Appendix

### Expert Interview Guide Questions

#### I Group: for the representatives of corporations/companies

Interview Guide Questions	Corresponding to Subsequent Research Question
<p>1) Why and when did the company decide to contribute to Environmental Education in Ukraine?</p> <p>2) Can you tell me, please, about your current/last work/project(s) in the field of Environmental Education in Ukraine?</p> <p>2.1. What topic/problem in the EE context does your project specialise in? (e.g. waste management, water management, responsible consumption, etc.)</p> <p>2.2. How long has this project/your (co)working been going on?</p>	<p><u>Introduction</u></p>
<p>3) What do you want to achieve with your work in the field of EE? What is your goal?</p> <p>4) What tools, methods and approaches are used to form an Environmental Awareness and eco-culture of young generation?</p>	<p><u>The company's contribution to non-formal environmental education:</u></p> <p><b>Goal(s)</b> <b>Methods</b> <b>Tools</b> <b>Approaches</b></p>
<p>5) What challenges do you face during planning and implementation of your project(s)?</p> <p>Could you, please, give an example concerning to such interactions as:</p> <p>5.1 You and students</p> <p>5.2 You and teachers, school staff</p> <p>5.3 You and government</p> <p>6) How do you characterize your cooperation with local and regional authorities?</p> <p>6.1 What role (active or passive) does the local and regional government play in the implementation of your EE projects in Ukrainian schools?</p> <p>6.2 Where the initiative comes from and in which form?</p> <p>7) What are the levels and mechanisms of financing such educational projects for students in this field?</p>	<p><u>Implementation and Cooperation</u></p> <p>What stakeholders are involved in the process of creating conditions for eco- education in Ukraine? (private sector, NGOs, youth organizations, local and regional authorities, etc.)</p> <p>Participation and role of the state and state institutions in eco-education (for example, levels and mechanisms of financing)</p>

Interview Guide Questions	Corresponding to Subsequent Research Question
<p>8) What is formal and non-formal environmental education in Ukraine in your opinion currently and what is their main difference?</p> <p>8.1 What do you think is more effective at the moment?</p> <p>9) What are the weaknesses and strengths of non-formal education in the field of environmental education (based on your experience)?</p> <p>10) What are the weaknesses and strengths of formal environmental education in Ukraine?</p> <p>11) Are there any prospects that your contribution and the contribution of your colleagues to non-formal environmental education will be integrated and become part of formal education at the official level? -If yes, what is needed to implement this? -If no, why?</p>	<p>Which type of education could play a more significant role in the formation of environmental awareness (among children and adults)?</p> <p>What are the strengths and weaknesses of formal environmental education in Ukraine?</p> <p>What are the strengths and weaknesses of non-formal environmental education in Ukraine?</p>
<p>12) If you had unlimited resources and possibilities, how would you organize an educational program in the context of environmental education?</p>	<p>Last Question</p>

## II Group: the representatives of NGOs/youth organisations

Interview Guide Questions	Corresponding to Subsequent Research Question
<p>1) Why and when did your organization decide to contribute to Environmental Education in Ukraine?</p> <p>2) Can you tell me, please, about your current/last work/project(s) in the field of Environmental Education in Ukraine?</p> <p>2.1. What topic/problem in the EE context does your project specialise in? (e.g. waste management, water management, responsible consumption, etc.)</p> <p>2.2. How long has this project/your (co)working been going on?</p>	<p><u>Introduction</u></p>
<p>3) What do you want to achieve with your work in the field of EE? What is your goal?</p> <p>4) What tools, methods and approaches are used to form an Environmental Awareness and eco-culture of young generation?</p>	<p><u>The company's contribution to non-formal environmental education:</u></p> <p><b>Goal(s)</b> <b>Methods</b> <b>Tools</b> <b>Approaches</b></p>

Interview Guide Questions	Corresponding to Subsequent Research Question
<p>5) What challenges do you face during planning and implementation of your project(s)?</p> <p>Could you, please, give an example concerning to such interactions as:</p> <p>5.1 You and students 5.2 You and teachers, school staff 5.3 You and government</p> <p><u>Partners:</u></p> <p>6) How do you characterize your cooperation with local and regional authorities?</p> <p>6.1 What role (active or passive) does the local and regional government play in the implementation of your EE projects in Ukrainian schools?</p> <p>6.2 Where does the initiative come from and in which form?</p> <p>7) What are the levels and mechanisms of financing such educational projects for students in this field?</p> <p>8) What is the main source of funding (state budget or private sector)? Do you have enough funding?</p>	<p><u>Implementation and Cooperation</u></p> <p>What stakeholders are involved in the process of creating conditions for EE in Ukraine? (private sector, NGOs, youth organizations, local and regional authorities, etc.)</p> <p>Participation and role of the state and state institutions in eco-education (for example, levels and mechanisms of financing)</p>
<p>9) What is formal and non-formal environmental education in Ukraine currently and what is their main difference?</p> <p>9.1 What do you think is more effective at the moment?</p> <p>10) What are the weaknesses and strengths of non-formal education in the field of environmental education (based on your experience)?</p> <p>11) What are the weaknesses and strengths of formal environmental education in Ukraine?</p> <p>12) Are there any prospects that your contribution and the contribution of your colleagues to non-formal environmental education will be integrated and become part of formal education at the official level? -If yes, what is needed to implement this? -If no, why?</p>	<p>Which type of education could play a more significant role in the formation of environmental awareness (among children and adults)?</p> <p>What are the strengths and weaknesses of formal environmental education in Ukraine?</p> <p>What are the strengths and weaknesses of non-formal environmental education in Ukraine?</p>
<p>13) In your opinion, what have been the positive changes in environmental education at school in recent years?</p> <p>14) What do you think were the less or unpleasant events/changes in the field of environmental education at school in recent years?</p>	<p>How has formal and non-formal education changed in recent years in Ukraine and what are the development trends now?</p>

Interview Guide Questions	Corresponding to Subsequent Research Question
15) If you had unlimited resources and possibilities, how would you organize an educational program in the context of environmental education?	Last Question

### III Group: the representatives of schools (principals)

Interview Guide Questions	Corresponding to Subsequent Research Question
1) What does «Environmental Education» mean to you? 2) Do you consider environmental education important for the Ukrainian School, and if so, why?	<u>Self-Attitude</u> <u>Relevance</u>
3) Has the school curriculum changed in the context of Environmental Education after entry into force of the reform of the Ukrainian New School? 4) What methods/approaches are used to foster “environmental competence”? Please, provide an example from own experience. 5) What methods and approaches are used to form an Environmental Awareness and eco-culture of young generation in the school? 6) What is the role of Environmental Education in Ukraine after the emergence of the concept of “Education for Sustainable Development”? 7) Do your students study such a concept as “Sustainable Development”, if yes, in what subject?	<u>Formal environmental education:</u> <b>Methods</b> <b>Tools</b> <b>Approaches</b> <b>Changes</b> <b>Reflection</b>
<u>Partners:</u> 8) Does your school take part in environmental projects and competitions? Give, please, an example. 9) Who is the organizer of these projects, whose initiative is that? 10) How do you characterize your cooperation with local and regional authorities? 10.1 What role (active or passive) does the local and regional government play in the implementation of your EE projects in Ukrainian schools? 10.2 Where the initiative comes from and in which form? 11) What are the levels and mechanisms of financing such educational projects for students in this field? 12) What is the main source of funding (state budget or private sector)? Do you have enough funding?	<u>Non-formal EE and Cooperation</u>  What stakeholders are involved in the process of creating conditions for EE in Ukraine? (private sector, NGOs, youth organizations, local and regional authorities, etc.)  Participation and role of the state and state institutions in eco-education (for example, levels and mechanisms of financing)

Interview Guide Questions	Corresponding to Subsequent Research Question
<p>13) What is formal and non-formal environmental education in Ukraine in your opinion currently and what is their main difference?</p> <p>13.1 What do you think is more effective at the moment?</p> <p>13.2 What form of training has a more positive effect on students' environmental awareness?</p> <p>14) What are the weaknesses and strengths of non-formal education in the field of environmental education? (based on your experience)</p> <p>15) What are the weaknesses and strengths of formal environmental education in Ukraine? (based on your experience)</p> <p>16) Are there any prospects that non-formal environmental education projects will be integrated and become part of formal education at the official level? -If yes, what is needed to implement this? -If no, why?</p>	<p>Which type of education could play a more significant role in the formation of environmental awareness (among children and adults)?</p> <p>What are the strengths and weaknesses of formal environmental education in Ukraine?</p> <p>What are the strengths and weaknesses of non-formal environmental education in Ukraine?</p>
<p>17) In your opinion, what have been the positive changes in environmental education at school in recent years?</p> <p>18) What do you think were the less or unpleasant events/ changes in the field of environmental education at school in recent years?</p>	<p>How has formal and non-formal education changed in recent years in Ukraine and what are the development trends now?</p>
<p>19) If you had unlimited resources and possibilities, how would you organize an educational program in the context of environmental education?</p>	<p>Last Question</p>