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## CARPATHIAN SCHOOL: LOOK TO THE FUTURE OF NON-FORMAL EDUCATION IN UKRAINE

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*Non-formal education is a social phenomenon that actively complements the traditional educational and scientific activities of classical educational universities. The "Third mission" of universities - education outside the classroom - is an actively developing movement in advanced countries, providing individuals with opportunities for self-development, self-realization, gaining new knowledge and practical experience. Understanding the "third" mission is an important component of success, as the social activities significantly increase the competitiveness of educational institutions in the educational services market. At this difficult time, when Ukrainian educational institutions are recovering from the Covid-19 pandemic and Russian troops are deliberately destroying key civilian infrastructure, educators are gaining a unique opportunity to test new ways of transmitting knowledge, skills and attitudes. Non-formal education has an opportunity to implement multidisciplinary knowledge and skills directly in communities, shaping this way the values of a democratic society. This publication aims at assessing the achievements of the Carpathian School educational project and discussing ways to further develop multidisciplinary programs in response to the social demands of local communities.*

*The issues of non-formal education are extremely important for Ukraine, especially in martial law, when uncertainty in the formation of the social consciousness of citizens is exacerbated by global political, economic and environmental challenges.*

*The case study of the International Carpathian School gives the practice of organizing non-formal education. The Taras Shevchenko National University of Kyiv together with partner universities, NGOs and National Nature Parks, organized the School on the border of Ivano-Frankivsk and Chernivtsi regions, in the centre of the Hutsul land. The existing network of universities, strengthened by public organizations, government and business institutions, has good prospects for establishing educational programs to support sustainable development (SD) in the Carpathian region. Authors state that non-formal education has effective tools for the formation of worldview principles of the XXI century, professional orientation and socially responsible social behaviour of the young generation*

**Keywords:** *university, non-formal education, sustainable development, the "third mission" of universities, climate change, waste management, biodiversity*

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### 1. Introduction

The 21st century contributes many challenges, affecting the research in education, that force defining of appropriate tools to achieve the Sustainable Development Goals (SDG-30). An important place in response to them belongs to the study of the state of the geographical sphere, the basement of living conditions of the population. Related issues include a public policy on sustainable resource management that should ensure long-term, cost-effective development and human resources, which are the basis of productive forces. At the same time, the public demand for full and quality existence largely depends on the state of the economy and the role of business structures, which should ideally adhere to the corporate social responsibility of doing business. The key element of such interaction is socially motivated citizens who have received the appropriate professional orientation and are conscious of the choice of future profession, receive the appropriate skills and competencies.

The complex nature of the problems, facing Ukraine, – the imperfection of public administration, external aggression and energy dependence on Russia,

the Covid-19 pandemic, incomplete reform of education and others – make it necessary for educators and scientists to find optimal ways to overcome barriers that exist in society to achieve SDG-30.

This applies primarily to universities, as traditional carriers of classical natural sciences and humanities, gathered under one roof. Universities have the most appropriate tools to achieve the geopolitical strategy of the state, which allows them to assess the formation of geopolitical space, identify existing barriers and outline ways to overcome them.

Universities are large, complex organizations that are gaining more weight in society because this is the placement where most of the highly skilled workforce is educated. Globalization has created new labour markets for students, thus opening universities to compete with institutions in other countries. Ukrainian institutions of higher education (HEIs), despite all the fundamentals and the existence of important scientific schools, are losing their positions and human resources. This situation can be largely explained by the weakening of public procurement for educational services and the severance of

ties between research and private business entities. In a competitive environment, the positioning of universities as providers of social services is an important factor that raises the prestige of the institution. In this process, the priority of traditional sciences is changing, new areas of research are being formed, there is a noticeable agglomeration of scientific areas, and the role of social disciplines is growing.

At present, in advanced countries, there is a clear trend to spread non-formal education that complements the traditional educational and scientific activities of classical universities with a "third mission". The development of a clear understanding of the "third" mission of universities is important because it significantly increases the competitiveness in both domestic and international markets.

The "third mission" is that universities can be useful in society. It is that universities disseminate scientific knowledge outside the academic environment, enriching their attractiveness as educational institutions. The current pandemic has added relevance, deepening the question of what should be the educational technologies of the future and how to make them more attractive to society. The explosive growth of academic mobility also opens wide horizons. After all, by 2025, 50 million people in China and India will need higher education every year.

The International Carpathian School is an experimental platform for testing new educational technologies and combining traditional classical scientific directions. Territorially, the school was originated in the Kosiv community of the Ivano-Frankivsk region in 2011, and later its activities have been spread to the Vyzhnytsia, Chernivtsi region, Ukraine. For six years now, the School has been working as an International Center for non-formal education to address the issue of youth adaptation to the globalized world, combining educational resources of scientists and teachers from 15 Ukrainian and five international universities, belonging to the Baltic Sea Region and Georgia. The socio-geographical nature of the thematic areas of the School led to the involvement of three National Natural Parks of Ukraine and two All-Ukrainian environmental NGOs.

Ukraine is suffering enormous damage, caused by Russia's military invasion, the terror of civilians, barbaric destruction of territory, energy blackmail, and destruction of cultural property. At the same time, it acquires a unique opportunity for the revival of national consciousness, the formation of worldview principles of sustainable development (SD) and the values of a democratic society. Education is a key element of the country's further development.

## 2. Literary review

The future professional and conscious member of civil society must have the ability to preserve cultural, scientific and moral values in a united system of knowledge about nature and be able to apply the acquired knowledge and skills to achieve a sustainable society. The core of educational programs in modern Western European universities is considered to be, enshrined in the documents of the UN Rio-92 Summit. Education for Sustainable Development (ESD) is the fourth dimension, designed to ensure human resource management. Over the last forty or fifty years, there have been more and more discussions and warnings

on this topic, especially after the energy crisis in 70s years of the last century, when the first Conference on the Environment in Stockholm recognized that human activities contribute to environmental degradation and threaten the future of the planet [1]. In our opinion, the "third mission" of universities should be aimed at achieving the SDG-30 in Ukraine, taking into account the specifics, set out in the Decree of the President of Ukraine [2].

UN regulations define quality education as one of the key goals of [3, 4]. Education is the most important factor in ensuring society, enabling a person to learn throughout life. The system of non-formal education provides an opportunity for a comprehensive perception of the world, to educate conscious members of society to understand the relationship and interdependence of human and nature. Awareness of the need to maintain global balance and involve technology in mitigating the pressure of environmental problems creates the conditions for the dissemination of knowledge, skills and abilities to make appropriate decisions, following the innovative transformation processes, taking place today.

Many global problems are complex, transcending political and administrative boundaries, and therefore addressing them requires enhanced domestic and international mobility, new ways of collective thinking and learning in an interdisciplinary and international space. The realities of today call for new interdisciplinary educational technologies, aimed at overcoming artificial barriers and cooperating beyond classical disciplines.

Numerous scientific studies are conducted in this direction. Thus, the authors [5] noted that the principles of modern vocational education need to be rethought and improved by society. Issues of energy-saving, saving material and human resources, focusing on social and environmental rather than market aspects are considered rather superficially, which in turn forms the appropriate style of thinking of the employee. The authors [6] conducted a thorough analysis of educational programs to determine the degree of integration of the principles in HEIs. According to their results, there are only a few studies of certain economic and environmental issues, and other ones, namely social, are not studied. The analysis of scientific publications on the research problem shows that in most cases the efforts of scientists are aimed at informing the population about the developed principles of SD. However, Koptina [7], Agbedakhin [8] and other authors believe that in parallel with the information campaign there should be appropriate changes in educational programs at the request of powered stakeholders - government and business structures.

One of the most important areas of SDG-30 is defined as task 16.10 "Ensure public access to information and protect fundamental freedoms per national legislation and international agreements." This is the goal of the organizers of the International Carpathian School [9], which offers ample opportunities to build a "third mission" of universities directly in the urban communities of the Hutsul region.

## 3. The aim and objectives of the study

The aim of this study is to highlight the problems, faced by educational institutions, while the pandemic and martial law are in the country, assess the development of

educational programs and educational activities, needed to overcome the postwar crisis in Ukraine.

To achieve this goal, the authors plan to meet the following tasks:

1. Highlighting the benefits of integrating classical natural and social sciences, strengthening the humanitarian component, and demonstrating "green" technologies on the example of the International Carpathian School.

2. Strengthening cooperation between stakeholder groups, such as universities, national nature parks, civil society organizations (CSOs), practices and local authorities.

3. Showing the priority areas of research to understand the essence of global economic and environmental transformations.

#### 4. Materials and Methods

The paper considers the theoretical and methodological aspects of introducing non-formal, vocational and professional education to bachelor's, master and post-graduate students in the context of the universities "third" mission. A comparative analysis of classical universities' methodology, which focused on a monodisciplinary approach, was performed in front of non-formal and professional education that implements complex curricula outside university classes. The implementation of the basic foundations of the university's "third mission" has been tested on multidisciplinary programs, developed for participants of the International Carpathian School. The effectiveness of the non-formal education model was measured by the number of participants, enrolled on the School through advertisements, and was tested in practice during the winter session of the Carpathian School. The issues of mobility, competitiveness and level of qualification of employees are considered in the context of the provisions of Ukrainian reforms in high education and science, taking advantage of academic mobility and labour market needs.

Regarding the thematic content of the Carpathian School, the experience of implementing UNDP-GEF programs on mitigation or adaptation to climate change, biological conservation, landscape diversity and land degradation were analyzed.

#### 5. Research results of their discussion

**Diversification in formal education.** One of the cornerstones of the perception of non-formal education and its role in the system of formalized higher education belongs to terminology. Without entering into controversy with authors who interpret non-formal education rather one-sidedly and ambiguously, we adhere to the views on its essence, presented by Bakhrushin [10].

**Formal education** is education that is institutionalized, intentional and planned, provided through state-recognized educational institutions. Formal education mainly concerns education, obtained before a person first enters the labour market, or at an age when education is considered to be the main activity. **Vocational education**, in particular adult education, is often recognized as part of the formal education system.

**Non-formal education** is education that is in addition to formal education or an alternative that takes place in the process of lifelong learning. It is designed for people of all ages. In particular, these may be short-term

programs and/or low-intensity programs, provided in the form of short courses, workshops and seminars. The advantage of non-formal education is the ability to create new flexible programs that develop life and work skills, aimed at social or cultural development.

The competitiveness of non-formal education in Ukraine becomes stronger because the regulator of formal education is losing the Soviet system of public procurement, often having no idea what profession and how many people are required by the modern labour market. This is a serious problem for formal entities, as society needs new professions every year, and staff whose professional skills do not fit into the formal education system.

Non-formal education usually leads to qualifications that are not recognized by national education authorities or do not involve the provision of qualifications at all. Recently, the relevance of non-formal education was confirmed by the Order of the Ministry of Education and Science of Ukraine "On approval of the Procedure for recognition in higher and professional higher education of learning outcomes, obtained through non-formal and/or informal education" [11]. This regulatory document sets out general requirements for procedures for the recognition in the higher and professional education of non-formal or informal learning outcomes. The order defines the range of institutions and persons to whom this procedure applies, the requirements for the recognition of non-formal learning outcomes within a formal educational institution and other organizational issues. The timeliness of such an Order, which recognizes the importance of non-formal education at the highest state level, is beyond doubt. These issues are especially relevant for Ukraine, as the market for non-formal and informal education services has been developing rapidly in recent years.

Last not least, what does informal education means in terms of formal one? Whether or not it means diversification. Diversification is a technique that reduces risk by allocating investments across various (financial) instruments, industries, and other categories. It aims to maximize returns by investing in different areas that would each react differently to the same event. The authors are insured that non-formal, informal and vocational education is an exact case of investments to empower our future generation.

At the same time, society has very limited information about the resources citizens need for self-education [10]. Reliable data on the non-formal education segment in Ukraine are scarce today. Unlike in OECD or EU countries, we do not know how many non-formal education institutions exist, how many people receive such education, which programs are most popular and in demand, how many teachers work in this field, and so on.

**View to the future of didactic materials.** The war with Russia exacerbated long-known social, economic and environmental problems, but at the same time opened up opportunities for a radical revision of outdated views on the role of education in society and the introduction of innovative models. After the war, Ukraine will face many problems, related to economic recovery, with limited resources, loss of human resources, lack of mid-level specialists, needed to carry out repair work, reclamation of war-torn areas.

The Carpathian School as a non-formal education institution can already focus on training future professionals in key areas of development, provide an impetus for training to correct the environmental catastrophe, into which the country is plunged. The following is a list of issues that we believe will have priority to address or mitigate the global challenges at the local level.

The recommendations of the EU Council for the Assessment of Non-Formal and Informal Education state that the assessment of learning outcomes, namely knowledge, skills and competencies, acquired through non-formal and informal education, can play an important role in enhancing employment and mobility [12]. Non-formal education offers "alternative forms of learning and new content that help people adapt to the ongoing transformations of society."

The issues of non-formal education are extremely important for Ukraine, especially in the state of war, when uncertainty in the strategic direction of social development is exacerbated by global political, economic and environmental challenges.

There are several examples of how multidisciplinary topics may be applied to nonformal curricula.

**Climate change.** Climate change imposes on traditional human activities many dangers, associated with the acceleration of greenhouse gas processes and ones that lead to an increase in fires and emergencies. So-called "climate technologies" must be complemented by an awareness of the dangers of different social groups. They should be implemented not only by scientists and technologists but also by the general public, who create anthropogenic pressure through their daily activities. Conscious attitude to the simple rules of everyday behaviour should be formed in society through upbringing and educational activities, which falls on the shoulders of educators and in the form of the "third" mission of universities, or education. And these are specific activities that have a direct and measurable positive effect – to give people the opportunity to better adapt to the effects of climate change.

Climate change is the most global and comprehensive topic, which has priority in shaping the thematic areas of the school. In general, at least 70 % of the factors of anthropogenic impact on climate change in one way or another are related to the livelihoods of urban settlements (housing, transport, energy, solid waste management, etc.) Some of these topics can be suggested to communities for mastery.

**Fires prevention and elimination.** Landfill fires are one of the most complex and long-lasting disasters in the last ten years, complementing the climate change issues. Extinguishing them requires significant resources, effort and time. The fire at Lviv's Hrybovychi landfill, Ukraine, in 2016 was a real tragedy, killing four people. Predicting and preventing fires at landfills is extremely difficult, as it is difficult to identify possible foci of temperature rise due to different specific heat of waste. Until fire or smoke comes to the surface, it is almost impossible to detect the source of ignition visually.

**Open fires.** To date, according to the European Forest Fire Information System (EFFIS), almost 102,000 hectares of all types of landscapes in Ukraine have been damaged as a result of Russian aggression. Biodiversity

and nature reserves, the objects of the Emerald Network are being destroyed and need to be renovated.

Swedish experience in fire prevention can help with its research on the remediation of contaminated landfills and dump fires. Swedish, Estonian and Lithuanian colleagues can assist in preparing lectures for Ukrainian audiences and, more importantly, provide guidelines on remedial operations on fire protection in Ukraine.

**Biodiversity and climate change.** Climate change impacts biodiversity through complex interactions among species and between species and their habitats. Changes to local conditions and resources will thus influence the species' ability to survive. And if a species can no longer survive in an ecosystem, it has two choices. It can relocate, or gradually disappear in different locations and eventually go extinct. Biodiversity is extremely complex, dynamic and varied like no other feature of the Earth. There are three National Natural Parks of Ukraine, actively involved in the Carpathian School agenda. Their assistance may find the responses to the most common questions: What should be the goals of resource management in the natural park service? What policies for bioresource management are necessary to achieve these goals? What actions are required to implement these policies? Broad in scope and implication, these questions and their answers are intended to help chart the course of natural resource stewardship.

**Waste management.** The transition from a linear to a circular economy in the waste sector involves several stages: separate collection, sorting, warehousing, processing into raw materials, briquetting/grinding and disposal of the indivisible residue. Each of these stages of processing is at a geographically different place. Therefore, there is a need for temporary storage, where the shelf life of different fractions varies from day to month.

An additional area in waste management may be the management of demolished construction, generated by bombing and demolition of buildings. EU countries have similar experiences, such as the revival of post-war Warsaw, Poland, and Estonia. Many Swedish companies have been involved in transferring technologies to Estonian companies, and this experience can be transferred to Ukraine and Georgia.

Waste recycling is a relatively new industry, and little is known about the risks of fires, associated with waste storage in Europe. In the cooperating countries, national statistics on waste fires are either missing or of poor quality, which is a major obstacle to the development of policies for the safe management and storage of waste and recyclables at the national and international levels. Waste stocks contain a variety of chemicals and products based on polymeric materials, so emissions from landfills are sustainable, bioaccumulative and toxic in nature. Toxic compounds, migrating from landfills, pollute the air, soil, groundwater and surface water and kill fish.

**Transfer technologies.** Human activities may also prevent climate change when speaking about clean technologies. Ukraine has a great opportunity to accelerate the transfer of clean technologies, which should be the basis for reducing greenhouse gas emissions and promoting a low-carbon economy and protection from climate change. As part of the Technology Needs Assessment

(TNA) project in Ukraine, implemented by the Ministry of Ecology and Natural Resources in cooperation with the Global Environment Facility, the project experts examined in detail the specific needs of modern technologies to achieve ambitious national low-carbon development goals for agriculture, waste and sanitation, and water supply. Information on the results of the project, at least in the water and waste sectors, can be provided to communities by professors of the Faculty of Geography of the Kyiv National University, who were invited by the Ministry to implement the project. Simultaneously, they are recognized experts in the Carpathian School.

**Migration.** Today, demographic processes in Ukraine are increasingly showing signs of national catastrophe due to the Russian invasion. The migration of the population of Ukraine has an extraordinary, unique character, which is not yet fully understood by EU countries. According to some estimates, the population of Ukraine has already lost up to 3.5 million people due to external migration. Internal migration is estimated at 6 million people. Migration and depopulation of the population are accompanied by the deterioration of important qualitative characteristics – especially the state of its health and education. More than 2 million people were forced to evacuate to Poland. A significant number of the population is accepted by other countries of the Baltic region, with which the Carpathian School has already developed ties and experience in implementing the Certificate Program of Academic Mobility.

With experience in corporate cooperation in science and education, the Carpathian School could significantly strengthen educational activities, forming a professional vision of thematic areas and practical measures to improve the environment. An important aspect of such activities is the awareness of communities about the consequences of the full-scale invasion of the Russian army in Ukraine and ways to restore the territory and infrastructure after the victory.

Despite the limitations in the development of the entire education sector in Ukraine, caused by the Covid-19 epidemic and the military invasion, unleashed by the Russian Federation, there are a number of factors, contributing to the further development of non-formal education. One of them is the forced migration of students and employees of educational institutions to the European Union. Thus, the University of Kyiv in one of the rector's orders recommends its educational units and the department of academic mobility to assist students, scientific and scientific-pedagogical staff who crossed the border of Ukraine after February 24, 2022 in the registration of the research internships, credit mobility, etc. The Carpathian School, whose Winter session, scheduled for February 24–29, 2022, was postponed by the war, also played a role in strengthening international relations and academic mobility. The authors see the prospects for further work of the School in involving various social groups in the development of the destroyed infrastructure on the basis of sustainable development of territories, taking into account the experience, gained in cooperation with universities in the Baltic region.

## 6. Conclusions

The analysis of the results and experience, gained within administrating of the Carpathian school gives a pos-

sibility to evaluate the project as successful as a whole. Applying academic mobility methods together with multi-functional short-term educational programs in close proximity to potential employers has been proven positively. The “third” mission of the universities obtained official recognition of the Ministry of Education and Science of Ukraine and was supported by the prominent universities. In terms of the presented study, the authors consider that tasks revealed the purpose of the study achieved.

1. Benefits to formal educational model. Non-formal education, due to its mobility and multi-vector nature, has the most effective tools for this work. The Carpathian School is an ideal place to create short-term courses for those practitioners who will build the country, whether it is post-war waste management or disaster relief. Such projects may be of interest to the Swedish Institute (SI) and other donor organizations. What we see in Ukraine can become an experience for teaching others for many years to come. The acquired knowledge and skills may be suitable for the transfer of such technologies to European universities.

2. The existing network of universities together with other participants of the Carpathian School could initiate the creation of a consortium and the development of a strategic vision of the Carpathian region from the standpoint of non-formal education. An example of an educational cluster for the implementation of joint scientific and educational activities is the Consortium of Warsaw and Ukrainian universities [10]. The School's development strategy could take into account enhanced collaboration with other stakeholders [11] and benefit greatly from their vision of approaches to community awareness and joint educational activities. It also has the opportunity to be a source of information for several international processes and agreements, such as the Framework Convention on the Protection and Sustainable Development of the Carpathians, the UN SDG-30.

### 6.1. The priority areas of research

Analyzing the experience and opportunities of the Carpathian school, the authors propose to focus on educational programs in the following areas:

*Improving community awareness.* Education for sustainable development has recently been on the agenda in Ukraine. In a broad sense, this process is still insufficiently understood by most higher education institutions. The interdisciplinary nature of the concept slows down its implementation in educational programs. Non-formal education has a flexible mechanism for cooperation with various social groups and the ability to involve international experts-practitioners and lecturers. This approach will help to improve the perception of the concept of sustainable development and help more participants understand the relevance and importance of the social and environmental components of the SR.

*Strengthening inter-sectoral cooperation.* The Carpathian School has a well-formed set of lecturers from several different sectors and spheres (teachers of higher education institutions, scientists, experts of public organizations, representatives of local governments, community activists, etc.). Cooperation in such an environment can improve inter-sectoral cooperation in the Carpathian region. A prom-

ising area in this segment is the training of trainers (TOT) programs, which can convey information to the public through teaching and public education.

*Dual education.* The Carpathian School is an ideal place to create short-term courses for practitioners who will rebuild the country after the war, be it post-war consequences or the elimination of the consequences of natural disasters or outdated waste management technologies. What we see in Ukraine can be gained experience for studying in other countries for many years to come. The Carpathian school has the prospect of building a bridge between the international and national levels of education and could become a bridge between English-speaking international organizations and their educational programs and teaching materials with diverse groups of participants at the national level. Such projects may be of interest to the Swedish Institute (SI) and other donor organizations.

*Transfer technologies.* The school could support national centres in developing measures to inform, con-

sult and involve stakeholders in activities under the Carpathian Convention. The acquired knowledge and skills may be suitable for the transfer of such technologies to European universities. Students and other participants of the school can advertise and disseminate information about the Carpathian Convention in their countries.

#### Conflicts of interest

The authors declare that they have no conflicts of interest.

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