

Towards the Carpathian ESD Expert Network: Integrating Education for Sustainable Development into the activities of the Carpathian Convention

*Forum Carpaticum 2021
June 21-25*

Report

The 6th Forum Carpaticum 2021 “– Linking the Environmental, Political and Societal Aspects for Carpathian Sustainability”, provided space to discuss ways towards integrating Education for Sustainable Development into the Carpathian Convention activities, as well as to present best practices and share knowledge and experience among the Conference participants.

The given report presents an overview of the main ESD-related presentations and discussions at the Forum.

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Executive Summary

The 6th Forum Carpathicum 2021 “– Linking the Environmental, Political and Societal Aspects for Carpathian Sustainability”, provided space to discuss ways towards integrating Education for Sustainable Development into the Carpathian Convention activities, as well as to present best practices and share knowledge and experience among the Conference participants.

The following events, focused on ESD, took place during the Forum:

- During the **Forum Plenary** (June 23, 2021), the **Keynote Presentation** was given by Dr. Lydia Katter-Wettstädt from Leuphana University Lüneburg on the topic of “**ESD in sustainable regional development. Approaches to Implementation**”. Dr. Wettstädt outlined main relevant definitions, and approaches, provided several examples of integration of ESD into local and regional development, and concluded with the following recommendations for the Carpathian region: 1) Identify Synergies of Different Activities, 2) Analyze and value status quo to deliver and support fitting formats, 3) Use Inter- and Transdisciplinary, multi-actor, multi-professional approaches, 4) Use ESD to inform, empower, engage, discuss and develop solutions in various thematic fields of the Carpathian Convention
- The Keynote was followed by a **poll**, meant to find out the **awareness about, engagement and interest in ESD** among the Forum participants. The results of the poll, conducted by Mónika Réti, Ministry of Human Capacities, can be seen on page 7 of this report.
- Information about the **World Environmental Education Congress 2022¹** (WEEC), planned to take place in March 2022 in Prague, Czech Republic, was provided by Jan Činčera, Masaryk university, the organizer of WEEC 2022, in order to invite interested Carpathian participants to take part.
- The **Session “Best practices of education for sustainable development in the Carpathians and other mountainous regions”**, took place on June 23, 2021. It consisted of several presentations (see page 11) and discussion.
The main recommendations from the session participants to the Carpathian Convention and Science for the Carpathians network include: 1) Carpathian countries are under-represented in the ESD research scene, and this should be addressed via identifying barriers and solutions; 2) Involvement, capacity-building and motivation of teachers are crucial, and should be facilitated; 3) Collaboration among school teachers (and / or pedagogical students) and university researchers / lecturers on field teaching activities should be encouraged; 4) Local stakeholders should be involved in teaching activities, focused on understanding the local socio-ecological system; 4) Examples from the Carpathian region of learning from nature and nature-inspired solutions should be collected, researched and disseminated; 5) Approaches, such as Living Labs and Citizen Science should be integrated stronger by research institutions in the Carpathian region; 6) “Respect Nature” Principles should be embedded in the Carpathian region, and Carpathian Convention activities
- **The ESD Workshop “Towards the Carpathian ESD Expert Network: Integrating Education for Sustainable Development into the activities of the Carpathian**

¹ <https://weec2022.org>

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Convention” took place on June 24, 2021. After the introductory presentation and preliminary discussion about the establishment of the Carpathian ESD Expert network, participants have been split into smaller groups to discuss: 1) the **Challenges for the integration of ESD into the Carpathian Convention**, 2) **Elements of a vision and a strategy** and 3) **Recommendations**.

1) **The following Challenges** for the integration of ESD into the Carpathian Convention, have been noted:

- **Challenges related to communication among stakeholders and networking, including** disconnect and difference in perspectives between various fields and actors, such as governing authorities, education institutions and other stakeholder;
- **Challenges Related to establishing the Carpathian Expert network**, including defining the appropriate nominated members of the network, facilitating a common understanding of the definitions and the scope of the network, and facilitating a common approach, acceptance and uptake of the network-related decisions on the national and regional levels;
- Challenges of **backing the ESD network process with sustainable financial and human resources**;
- Challenges related to the **Research and science-practice interface**, including the lack of understanding of ESD and its meaning for the Carpathian region, lack of overview of existing literature in the region, lack of consideration of the importance of education among the scientists.

2) Comments with respect to **Elements of a vision and a strategy, included the following**:

- **Recommended additions to the Vision:** Explaining why we are using ESD as the overarching term, and explaining how other terms fit, and are also part of the vision and strategy; Including a definition of sustainability for the purposes of the Vision and Strategy; Stressing Carpathian traditional knowledge;
- **Aims and objectives of the ESD Expert Network should include: Fostering cross-border collaboration in the Carpathian region; Collecting and promoting good examples and case studies from the Convention, its partners and stakeholders; Stressing the importance of Carpathian traditional knowledge in modern contexts; Reflection on societal and economic and cultural issues of the region; Localizing, updating and adapting SDG indicators in the Carpathian region; General awareness-raising and education** at the level of Carpathian communities; facilitating awareness raising among the **young generations** about socio-ecological systems, nature conservation and environmental protection;
- **Composition of the network:** The ESD Expert Network shall be an open multi-actor network, open to all interested and active experts and Carpathian Convention partners and stakeholders, working in different fields of sustainable development. At the same time, each Carpathian country will be requested to nominate several official representatives to the network, with the criteria that each nominee should have experience or be engaged in Education / ESD-related work. The nominated representatives will be responsible for close collaboration among each other and with the Carpathian Convention Focal Points. However,

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knowledge all network members, both officially nominated and voluntarily joined, will be considered on an equal basis.

- **Target Groups of Carpathian ESD Network activities will** extend to: all relevant Carpathian Convention stakeholders, involved in Carpathian Convention activities, including, but not limited to the Carpathian Convention Implementation Committee and Working Groups, The Science for the Carpathians network and Carpathian Network of Protected Areas, Actors involved in informal and non-formal education -related initiatives, and Local and regional authorities and local actors involved in various aspects of nature protection and sustainable development
- 3) Recommendations, provided by the participants, included:
 - Recommendations related to **the ESD Network Composition, including:** nominating several members from each country, representing different sectors, such as: 1) the government, 2) S4C 3) NGOs, 4) educational institutions. Each nominee should have experience or be engaged in Education / ESD-related work. The New ESD network should include already existing ESD networks at national level, and provide opportunities for inputs from non-English speaking actors.
 - Recommendations related to the **ESD Network Activities, including: considering the needs of the** educational community and of the different target groups, and how the network can address them, enhancing connections among different actors and different sectors, awareness raising for decision makers at different levels, considering the specifics of the Carpathian Mountain region.
 - Recommendations related to the **links between the ESD Network and S4C, including: facilitating research recommendations, and transmission of knowledge, which are** societally relevant, understandable by policy and practice experts, and realistic/implementable, implementing, integrating methods of Living Labs and Citizen Science into ESD-related research, integrating ESD into other subjects, and focusing research efforts on schools.
- **The next steps in establishing the Carpathian ESD Expert Network include:**
 - 1) Finalization of the given report;
 - 2) Updating the Vision and Strategy based on the received recommendations, presenting the next draft to the Carpathian Convention Focal Points and to the Carpathian Convention Implementation Committee;
 - 3) Initiating background research about the existing actors relevant for the Carpathian ESD Expert network, with feedback and inputs from the interested actors;
 - 4) Requesting the Carpathian Convention Focal Points to support official nominations for ESD Experts;
 - 5) Co-organizing the Second Carpathian ESD Seminar in 2022.

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The Report

I. Forum Plenary (June 23, 2021, 9:00 – 10:30)

- **ESD Keynote. ESD in sustainable regional development. Approaches to Implementation** *Lydia Katter-Wettstädt from Leuphana University Lüneburg*



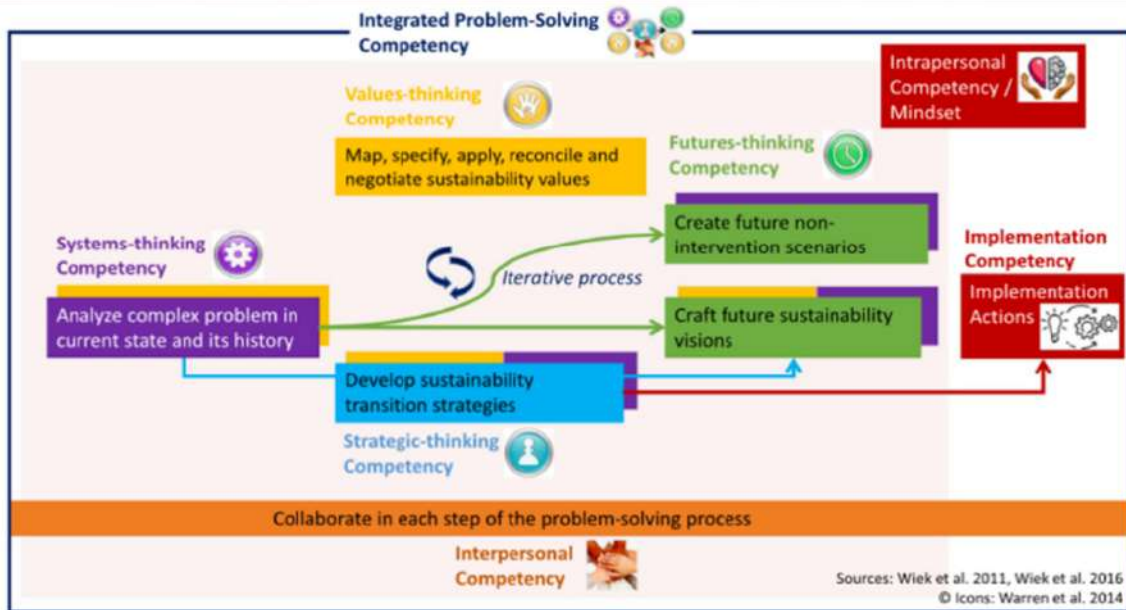
- *ESD is necessary to bring up aware and sustainable consumers*
- *Various approaches: SDG4, UNESCO, OECD and EU level*
 - *EU Strategic Framework for European Cooperation in Education and Training (Priority Area 5)*



Source: Keynote presentation, Lydia Katter-Wettstädt

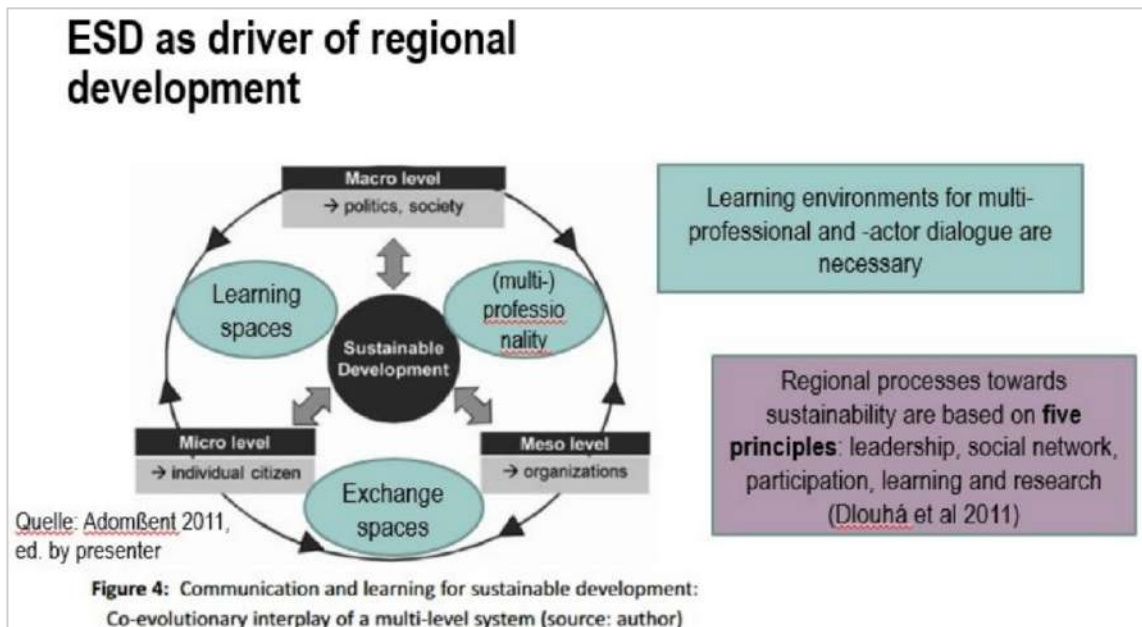
- **Competency Concepts**
 - *A Rounder Sense of Purpose competences*
 - *Competence framework for Sustainability Sciences*

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Source: Brundiers et al. 2021, p. 21. In Keynote presentation, Lydia Katter-Wettstädt²

- ESD in Regional Development: Need to empower the local population to find the answers to how sustainable livelihoods can be realized



Source: Keynote presentation, Lydia Katter-Wettstädt

² Brundiers, K., Barth, M., Cebrián, G., Cohen, M., Diaz, L., Doucette-Remington, S., Dripps, W., Habron, G., Harré, N., Jarchow, M. and Losch, K., 2020. Key competencies in sustainability in higher education—toward an agreed-upon reference framework. *Sustainability Science*, pp. 1-17

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- *Universities and Communities as drivers of sustainable regional development*
 - *Approaches to enhancing the role of Universities as drivers: Citizen Science, Public Lectures, Real World Laboratories*



Source: Keynote presentation, Lydia Katter-Wettstädt

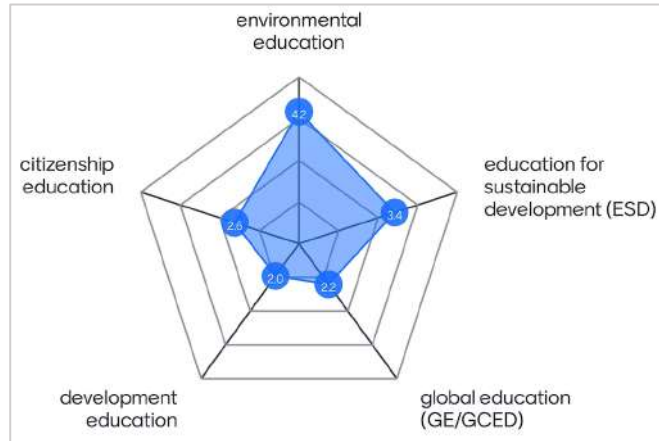
- *Examples from Leuphana Institute for Sustainable development and Learning: Lüneburg 2030, TdAcademy*
- **Concluding Words - ESD for the Carpathians:**
 - *Identify Synergies of Different Activities*
 - *Analyze and value status quo to deliver and support fitting formats*
 - *Use Inter- and Transdisciplinary, multi-actor, multi-professional approaches*
 - *Use ESD to inform, empower, engage, discuss and develop solutions in various thematic fields of the Carpathian Convention*

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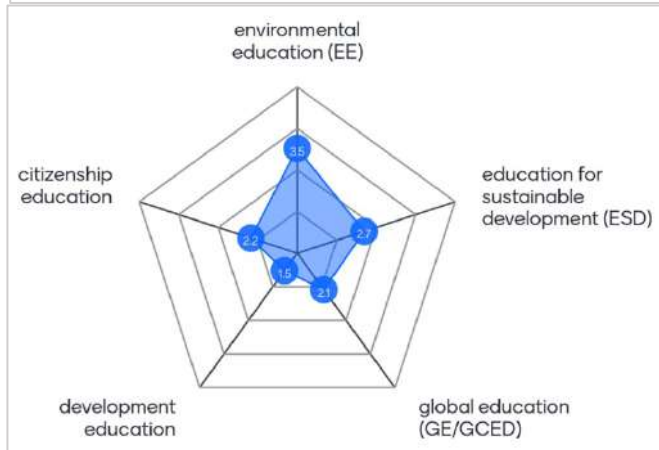
Participatory Exercise: Awareness, Engagement, Interest in ESD

Mónika Réti, Ministry of Human Capacities

- Familiarity of participants with educational concepts (24 participants):



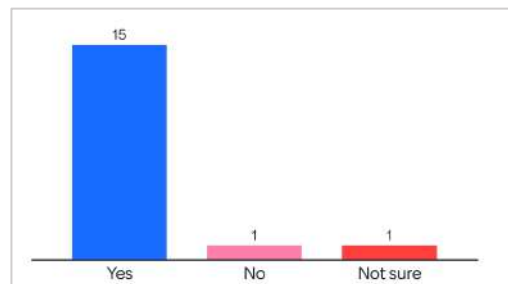
- Engagement of participants in the fields (23 participants):



- Ways of Engagement by Forum participants in the fields (18 participants):



- Interest to join the Carpathian ESD Expert Network (17 participants)



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- **World Environmental Education Congress 2022** Jan Činčera, Masaryk university



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Source: presentation, Jan Činčera

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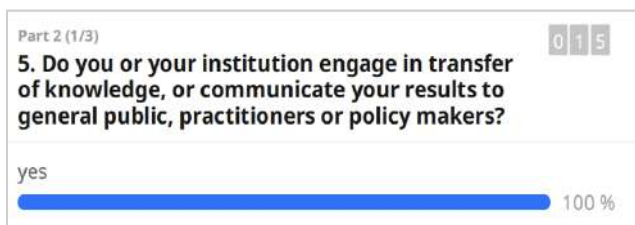
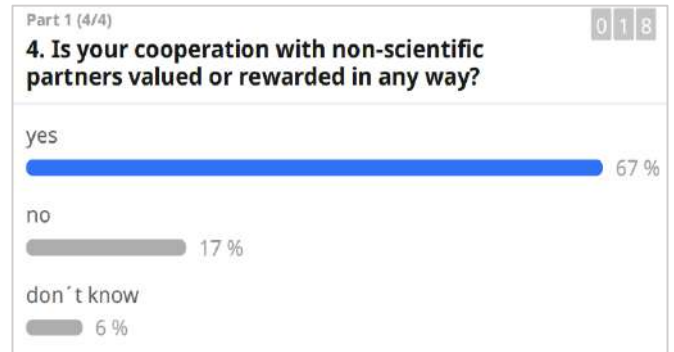
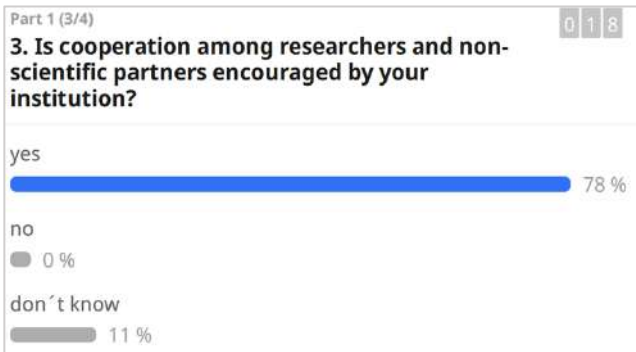
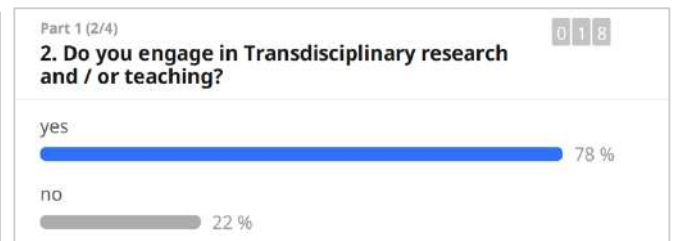
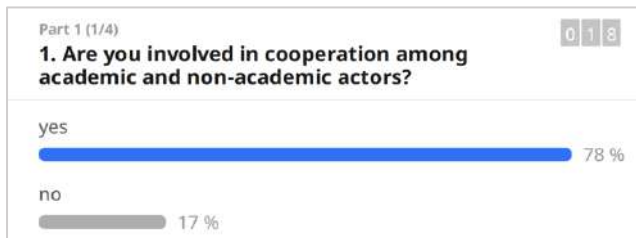
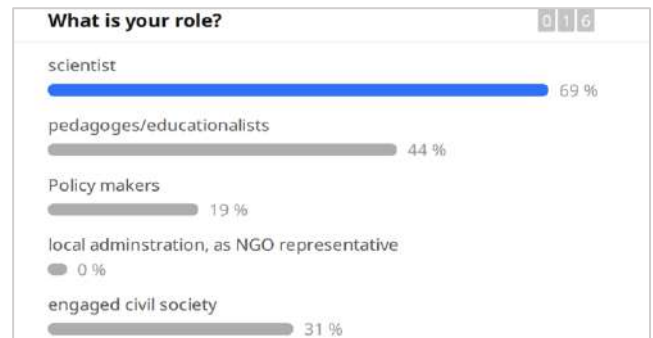
Abstract submissions till: 31 August 2021
Registration till: 31 December 2021

Website: <https://weec2022.org/>
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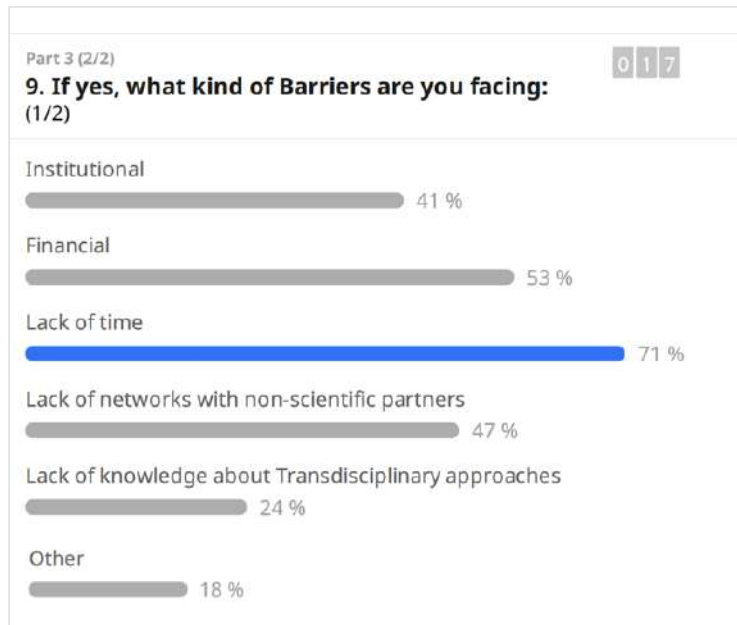
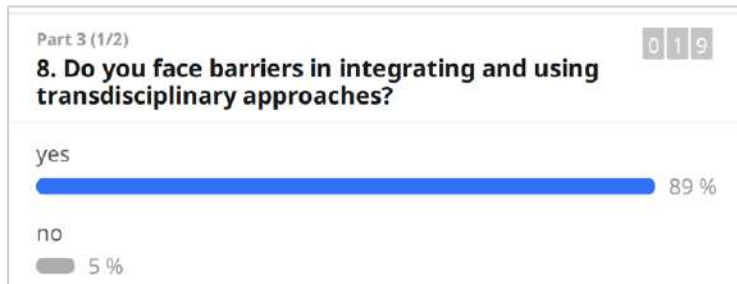
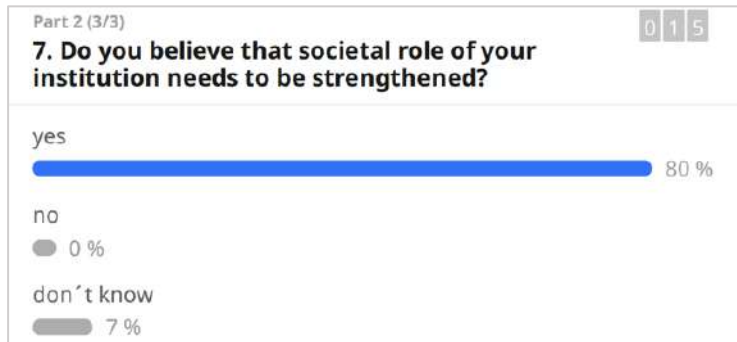
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• **Societal Role of S4C Poll and discussion** (Moderated by Mitrofanenko, T. and Zawiejska, J.)

Participants have been asked to answer a number of questions focused on the societal role of universities (with a focus on sustainable regional development) via an online poll. The poll constituted of three parts. Participants could select multiple answers. The visualization of the results is presented here.

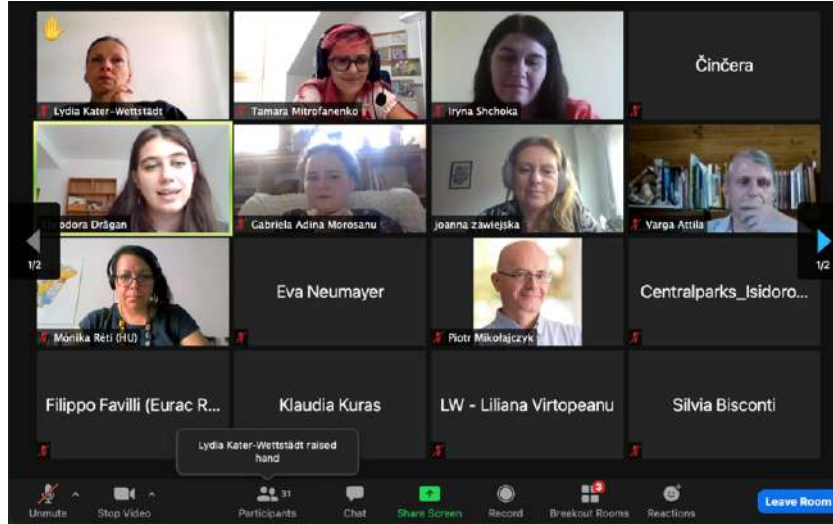


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II. Session: Best practices of education for sustainable development in the Carpathians and other mountainous regions (June 23, 2021, 11:00 – 12:30)



The following contributions have been submitted to and accepted by the Conference committee, and presented during the Session (**abstracts can be found in the Forum Carpaticum Book of Abstracts and in Annex 1**):

- Recommendations for Stronger Integration of Education for Sustainable Development into the Carpathian Convention: results of a participatory process (Mitrofanenko, T., Varga, A., Zawiejska, J.)
- Bringing primary school pupils closer to environmental education. Proposal for a field itinerary in Romanian Carpathian Mountains (Drăgan T., Moroşanu G.A.)
- BioLearn – project about how to use biomimicry in education for sustainability (Neumayer É., Dobiasova M., Medalova K.)
- Respect Nature in the Carpathians (Shchoka I., Rossberg M., Öllös H.)

Additional relevant inputs have been presented, in order to provide the bridge between the Session discussion, and the ESD Workshop.

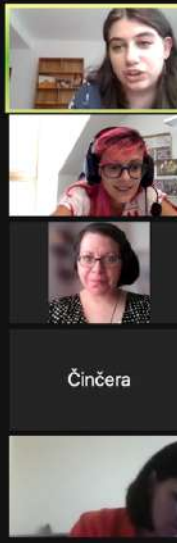
- First Carpathian ESD Seminar (Mónika Réti)
- World Environment Education Congress (Jan Činčera)



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Main messages and recommendations to the convention and S4C:

Application message	
<ul style="list-style-type: none"> Environmental education is a complex process and also a responsibility of primary school and geography teachers. The collaboration between pre-university and university professors for the research of the proper means of exploring nature in the primary classes is necessary for establishing the strategies of practical teaching of environmental sciences. The Carpathian Mountains can be a good environment for bringing pupils closer to principles related to the importance of natural elements and their protection, using educational games, frontal discussions and cartographic applications. 	
Message to the Carpathian Convention Secretariat	
<p>Planning a field activity on a Carpathian itinerary for pupils, through the collaboration of a geography student (and also a primary school teacher) and a university teacher can be a good way to achieve education for sustainable development (ESD) prioritized within the Carpathian Convention.</p>	
Bringing primary school pupils closer to environmental education - proposal for a filed itinerary in Roumanian Carpathian mountains	DRĂGAN Theodora MOROȘANU Gabriela Adina



Source: presentation, Theodora Drăgan

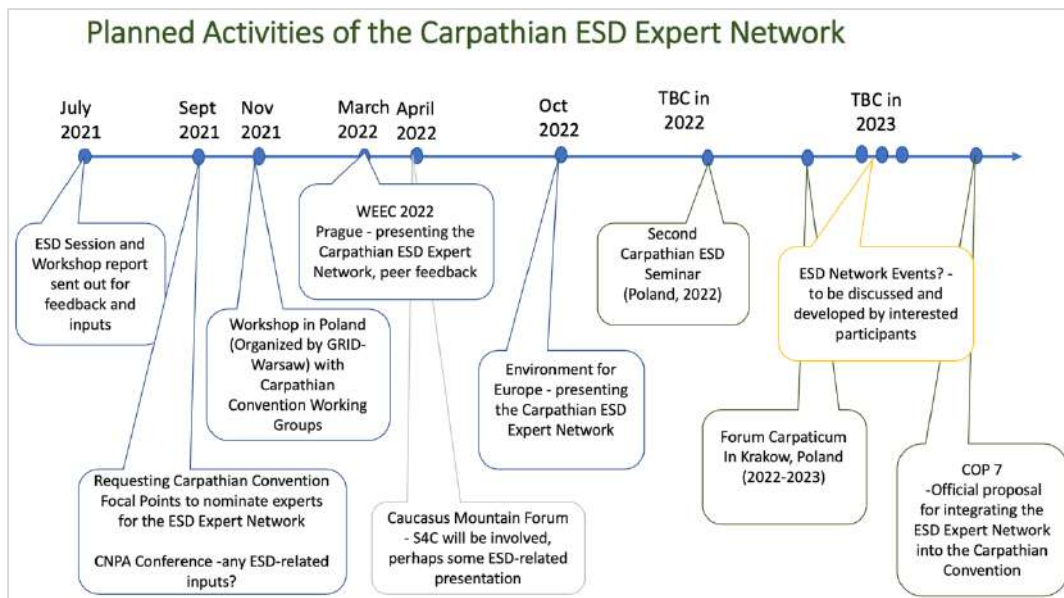
- Carpathian countries are under-represented in the ESD research scene
 - Possible barriers need to be identified and strategies for better/easier participation need to be developed
 - We need to participate more in the ESD-related activities and publications
- Involvement and capacity-building of teachers is crucial. Teachers need to be motivated to participate in training activities
- Collaboration among school teachers (and / or pedagogical students) and university researchers / lecturers on field teaching activities can help bridge the gap in communication among teachers and researchers
- It is important to involve local stakeholders in teaching activities, focused on discovering an understanding the local natural and cultural heritage, and socio-ecological system – this should be facilitated (for example, by supporting networking among local educational institutions with other actors)
- We should collect more examples from the Carpathian region of learning from nature, nature-inspired solutions, such as biomimicry
 - Both to have locally-based solutions, and to address the under-representation of Carpathian countries in the ESD research scene
- Several ‘society-based’ approaches should be integrated into the research methods in the Carpathians: Living Labs, Citizen Science, etc.
- “Respect Nature” Principles should be embedded in the Carpathian region, and Carpathian Convention activities
- Educational materials on Sustainable development in Carpathians should be developed, translated to Carpathian languages and disseminated among key actors in each Carpathian country. As such, education material developed within the [Interreg CE Centralparks](#) project, focusing on understanding and valuing the cultural and natural heritage of the Carpathians should be further disseminated after the project end and integrated into educational activities.

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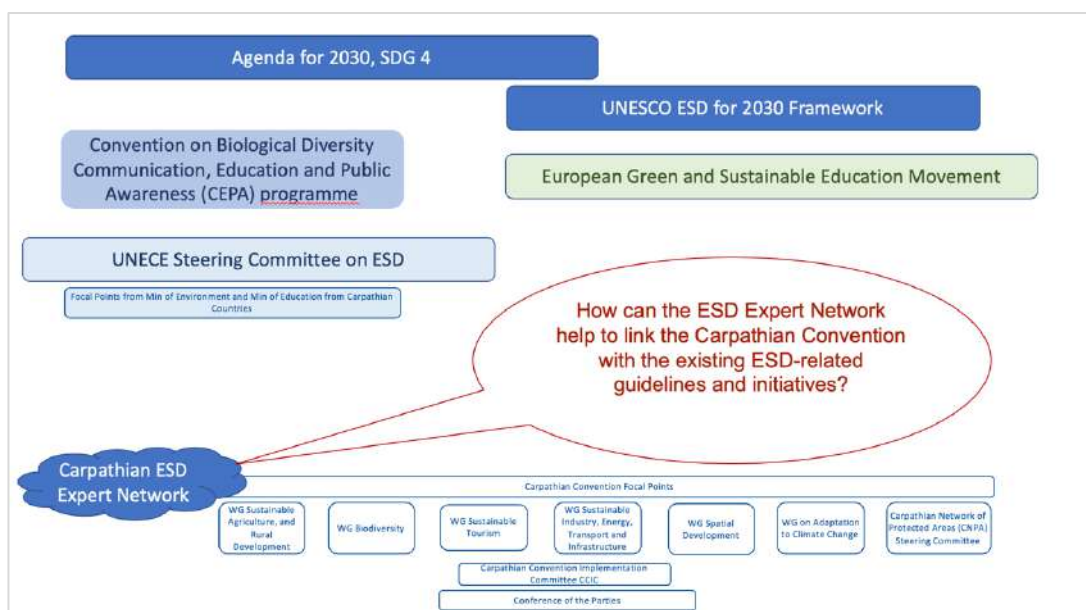
III. ESD Workshop. Towards the Carpathian ESD Expert Network: Integrating Education for Sustainable Development into the activities of the Carpathian Convention (June 24, 2021, 14:00 – 15:30)

- **Introductory presentation:**

- Brief overview of participatory exercise at the Forum Carpathicum Plenary - Familiarity, Engagement, Interest in education
- Timeline of planned activities



- Illustration of the Carpathian Convention and various ESD frameworks



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Main discussion points:

- Who could be considered an ESD Expert?
- What are the target groups, and what are their needs?
 - Carpathian Convention focal points, partners and stakeholders, S4C, (university) students, teachers
- Formal, informal and non-formal education paths need to be considered
- It is important to balance the composition of the network, with participants with knowledge in education, scientists, and considering the level of formality
- We should not only focus on SDG4, but also on other SDGs
 - Select, which SDGs are important for the Carpathian region /in the context of the Convention implementation
 - Include traditional knowledge and regional contexts and challenges
- The language of the ESD network-related documents should be audience-oriented, jargon-free and less political, to facilitate understanding by all target audience groups (including all interested stakeholders and general public)
- Stock-taking of existing structures on the national and regional level would be useful
 - Existing national ESD networks should be included /invited to participate
 - Green Dossier is part of the Baltic network
 - There is a Green University Network and a Balkan university network.
 - The Carpathian ESD Expert Network members will be asked to provide information about the existing groups and networks on the national level, who would be relevant to contact, invite, and keep in touch /exchange with
 - Existing initiatives and activities of Carpathian Convention partners, related to ESD
- Media shall be involved and invited, in order to help with dissemination and outreach
- A meeting could be organized during the World Environmental Education Congress
 - Perhaps, as a side-event



Working in groups:

Participants were divided in 6 groups during 2 break-out sessions, in order to discuss 1) the **Challenges for the integration of ESD into the Carpathian Convention**, 2) **Elements of a vision and a strategy and 3) Recommendations**. Participants were asked to note down discussion points in the shared google document. Brief discussion took place in plenary.

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Results of participatory discussion on Question 1 (12 minute breakout sessions)

1. Challenges for the integration of ESD into the Carpathian Convention

- General / Overarching challenges
- Specific challenges for each Carpathian Country / each participating institution
- Challenges for establishing the ESD Expert network and its integration into the Carpathian Convention

Challenges contributed by participants have been grouped in several categories. Some challenges have been formulated as recommendations - those have been moved to the Recommendations section.

Communication among stakeholders and networking-related:

- Communication, gaps in communication pathways
- Disconnect between authorities, education institutions and other stakeholder
- Different perspectives by different stakeholders - “each group talking in their own language”
- Lack of connection between particular fields (university education / school level; formal/informal education etc.)

Related to establishing the Carpathian Expert network:

- Why this is important to have such a network and who can be labelled as “expert”? → the network should define itself and find its mission
- Build awareness of what ESD is, and how that can fit into the Carpathian Convention - we need to be clear that ESD is not only directly related to education, but also to other fields of the Convention
 - Different level of awareness among colleagues in different Carpathian countries, we need to address this appropriately
- Identifying the right persons to be part of the group (ESD Network)
 - Identifying adequately skilled and qualified colleagues to be nominated officially from each Carpathian country - if possible, someone with a view /knowledge about the other relevant ESD-related processes
 - Defining “workable / influencing ” ESD country network representative
 - Involving experts from other thematic areas of the Convention and S4C
- National level agenda and support in each country
- Institutional differences between Carpathian countries/ regions and delayed implementation of a potential common project within ESD Expert network
- Acceptance of the recommendations at the ministerial level - how can we best ensure it

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Backing the ESD network process with sustainable financial and human resources:

- Lack of funding
 - Funding for joint cross-border ESD program/ projects in Carpathian countries
- Lack of time, prioritizing other responsibilities

Research and science-practice interface:

- Lack of a common understanding of ESD
- How to use the literature → systematic overview of what is already there. Here an example of the development of the sustainable tourism in the Carpathians' databases: <http://www.ceeweb.org/stcdb/>, can be used as a way of information systematization and accessibility for broader public
- Articulating adult and citizen education with research / academia ESD initiatives/ objectives
- Lack of awareness or consideration by the scientists of the impact of primary and other levels of education on their daily work (due to time and system-related constraints, scope of work, etc.)

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For the discussion of questions 2 and 3, participants were divided in groups again, with different composition, in order to support networking. The groups were given 20 minutes.

2. Elements of a Vision and Strategy

Vision

Suggested revisions:

- **Explaining why we are using ESD as the overarching term, and explaining how other terms fit, and are also part of the vision and strategy.**

We use ESD for practical and strategic reasons: its use in the global guidelines by UNESCO (ESD for 2030 framework), as well as UNECE (Steering Committee on ESD); its relevance for SDGs, which cover all aspects of sustainable development, as well as its explicit mention in SDG 4.7:

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development³.

We chose ESD as an umbrella term, and do not mean to exclude other similar concepts, which are closely related or complementary to ESD, including, but not limited to: Environmental Education, Environmental and Sustainability Education, Climate Education, Global Education, Education for Environmental Citizenship.

We also accept various interpretations of ESD, relevant for different settings – but in accordance with its main goals, as described in SDG 4.7.

We do not aim to limit the Network by any specific term, but rather consider what are the needs of the Carpathian Convention stakeholders with respect to education and awareness raising for promoting nature protection and sustainable development in the Carpathian region (content-oriented, and not bound to any specific definition).

- **Including a definition of sustainability for the purposes of the Vision and Strategy**

For the purposes of the Vision of the Carpathian ESD Network, we understand “Sustainability” as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”⁴ (This definition is provisional and can be updated based on more recent literature).

³ UN [United Nations]. 2015. Resolution Adopted by the General Assembly on 25 September 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. General Assembly Report No. A/RES/70/1. New York, NY: UN. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E; accessed on 20 September 2021. (Goal 4.7, 17/35).

⁴ United Nations General Assembly. (1987). Report of the world commission on environment and development: Our common future. Oslo, Norway: United Nations General Assembly, Development and International Co-operation: Environment.

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Aims and Objectives:

Carpathian Convention can act as a mechanism, supporting implementation of SDGs and of the UNESCO Framework for the Implementation of Education for Sustainable Development (ESD) Beyond 2019 (ESD for 2030 Framework)⁵ in the Carpathian region.

The Carpathian ESD Expert network will support the Convention, its partners and stakeholders in contributing to the following processes in the region:

- **Fostering cross-border collaboration in the Carpathian region**
- **Collecting and promoting good examples and case studies from the Convention, its partners and stakeholders**
- **Stressing the importance of and promoting Carpathian traditional knowledge in modern contexts** - more preserved in the Carpathians compared to other regions of Europe - how this network is peculiar, unique
- **Reflection on societal, environmental and economic and cultural issues of the region:** promoting green jobs, circular economy, biomass-based economy and industry, traditional knowledge about Carpathian lifestyles, traditional land use, environmental assessment of the human activities
- **Localizing, updating and adapting SDG indicators in the Carpathian region:** which are the most important to the Carpathian region and stakeholders?
 - SDG4 is very broad and many of targets are already commonly achieved;
 - ESD is present in other SDGs (SDG12.1 and 13.1)
- **General awareness-raising and education** at the level of Carpathian communities, general public and local and national decision-makers' level
 - SDGs implementation at the regional level, importance of biodiversity, realizing the limits of growth, respecting nature
 - Understanding the importance of sustainable development (e.g. ecosystem services, incentive driven approach, natural capital, quality of life)
- **Teaching young generations** about socio-ecological systems, nature conservation and environmental protection, sustainable business/economy, waste management, participation in the decision-making processes

Strategy elements:

The Carpathian ESD Expert Network will closely collaborate with the Science for Carpathians network to facilitate building a link between Carpathian scientists and society, as well as between the informal and formal educational initiatives.

- The Carpathian ESD Expert Network will collaborate with the ESD-focused thematic group of the S4C community

⁵ UNESCO [United Nations Educational, Scientific and Cultural Organization]. 2019. Framework for the Implementation of Education for Sustainable Development (ESD) Beyond 2019. <https://unesdoc.unesco.org/ark:/48223/pf0000370215>; accessed on 29 April 2020.

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- The Carpathian ESD Expert Network will help create a continuous ESD section during the S4C Scientific Conference Forum Carpaticum, and collaborate with other S4C thematic groups to organize joint sessions (e.g. dedicated to forestry education, protected area- or water-related education themes)

Composition of the Network:

The ESD Expert Network shall be an open multi-actor network, open to all interested and active experts and Carpathian Convention partners and stakeholders, working in different fields of sustainable development.

It is recommended that the following experts from every Carpathian country constitute part of the network:

- Representatives of Formal Education institutions, incl. students
- Representatives of Informal Education (institutions or individual experts)
- NGOs
- Scientists
- Public environmental institutions operating in the Carpathian area
- National, regional and local government representatives / authorities
 - representatives of the local authorities have a good overview of the activities at the local level, they could help awareness-raising about the nature of ESD and understanding of locally-relevant sustainability challenges in ESD activities
 - Liaison with national, regional and local public media representatives (traditional “journalists” or /and social media)

The members will include: 1) officially nominated governmental representatives, 2) invited educators, scientific and NGO experts, as well as 3) interested and motivated professionals from any sector.

- Each Carpathian country will be requested to nominate an official governmental representatives to the network, with the criteria that each nominee should have experience in or be engaged in Education / ESD-related work.
- The Carpathian Convention Secretariat upon consultation with the Focal Points, ESD experts and the S4C will invite recommended experts to join the network.
- Efforts will be made to invite experts from underrepresented / minority groups to become part of the network and to integrate their knowledge into the process of decision-making.

The aim is to include the following representatives from each Carpathian Country:

1. At least one ministerial representative
2. At least one representative of academia
3. At least one representative of NGO
4. At least one representative of an educational institution

The nominated representatives will be responsible for close collaboration among each other and with the Carpathian Convention Focal Points. However, knowledge of all network

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members, both officially nominated and voluntarily joined, will be considered on an equal basis when taking decisions.

Information and exchange among individual members about their activities, relevant for the network, on local, regional or national level, will be encouraged.

Members will be asked to regularly contribute information, in order to ensure a systematic review of ESD-related activities, relevant for the Carpathian Convention, including, but not limited to: active communities engaged in ESD-related activities; examples of use of participatory knowledge-production methods; what can be learned from best practices and existing examples.

Target Groups of Carpathian ESD Network activities:

The network activities will extend its focus beyond children and youth, to

- 1) All relevant Carpathian Convention stakeholders, involved in Carpathian Convention activities, including, but not limited to
 - a. Carpathian Convention Implementation Committee and Working Groups
 - b. The Science for the Carpathians network
 - c. Carpathian Network of Protected Areas
- 2) Actors involved in informal and non-formal education -related initiatives
- 3) Local and regional authorities and local actors involved in various aspects of nature protection and sustainable development

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3. Recommendations

- How the Convention can help the Carpathian countries implement the UNESCO ESD for 2030 framework
- Concrete actions for further integration of ESD in the Carpathian Convention, in light of the ESD for 2030 Framework
- Following up on the recommendations resulting from Forum Carpaticum 2018 and the first Carpathian ESD Seminar

Related to the Vision and Strategy:

- Think about the purpose and the respective language of the document - it is rather political - if we talk about education, the language should be more understandable
- Make clear the difference of Environmental Education to ESD (this could be done by including a graphical representation of several concepts related to or similar to ESD)
- Formal and nonformal education should be integrated

Related to the ESD Network Composition

- In order to have a balance of power among the network members from different sectors, it is important to ensure that the knowledge of all members is considered when making decisions.
- New ESD network should be linked to already existing ESD networks at national level.
 - Check if there is similar network emerging, for instance, among National Park educators or forest educators
- It is important to consider how educators who do not speak English can be involved, and how to disseminate the result at the national level.
- Ensuring a strong relationship between ESD partners at all levels (pre-university, universities and academia, NGOs, Governments)

Related to the ESD Network Activities

- What are the needs of the educational community - how the ESD network can contribute to the practitioners, to research at universities etc. - for example develop guidelines for ESE, more specific things
- Are we able to identify the needs, the quality of research, methods that should be developed more, barriers that can be overcome with a help of the ESD network?
- What are the connections within the ESD network at different level - like universities and schools, research and practice. Can we enhance the connections? Do we want to do it? Who will do it? Ask the target groups what they want, what is their vision of connection and collaboration.
- Awareness raising for decision makers on different levels (local, regional, national)
 - Promoting ESD to officials, business but also to rural areas with concrete activities
 - Integrating ESD to general developments (e.g. economics)
- Educating of different target groups (nature conservation authorities, public, decision makers, investors, business, educators (training for trainers) needs different approaches, proper ministries, responsible for different protocols
- Considering specific elements of the Carpathian Mountain region

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Related to links between the ESD Network and S4C

- The recommendations provided by the scientists in this respect should be societally relevant, understandable by policy and practice experts, and realistic/implementable
- Implementing Real World Laboratories (living labs) and combining them with ESD
- Disseminating ideas about transdisciplinary work
- Knowledge transmission of latest science results
- Create an appreciation of citizen science and establish involvement in the science scene and then empower teachers to get involved in such
- ESD needs to feed into the different subjects, it should not be seen as something additional, getting familiar with interdisciplinary working
- Focusing on schools, business, decision makers and authorities
- Conducting participatory research with the aim of strengthening the network, involving the target groups, and identification of what they want, what is their vision of connection and collaboration.

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Annex 1. Potential questions for follow-up discussions

- What are previous experiences of networks related to or created in the framework of the Carpathian Convention? What can be learned from these experiences?
- What are the needs of the educational community - how the Carpathian ESD Expert network can contribute to the practitioners, to research at universities etc. (for example, development of specific guidelines for implementing ESD or other ESD-related concepts, with the view that we are operating in the framework of the Carpathian Convention)?
- How can we identify the needs, the quality of research, methods that should be further developed, barriers that can be overcome with a help of the ESD Network?
- What are the connections within the ESD network at different level - like universities and schools, research and practice.
 - How can we map these connections (network analysis?)
 - Can we enhance the connections? Do we want to do it? Who will do it?
- **The Concrete strategies and Best practices and examples from the Carpathians**
 - How can we best collect examples of best practices (would online documents work for this purpose?)
 - Which existing tools or examples from the Convention partnerships could be used (Carpathian sustainable tourism databases as an example⁶)
 - What are the various Convention activities, which are related to or can be designated as ESD
 - What potential strategies linked to learning, sharing and integration of knowledge can we use to address Carpathian Sustainability challenges? and which roles can specific actors plan in these strategies
- **Role of the scientists / Universities / S4C**
 - Could Universities support the process of collection of good examples?
 - How can the S4C and scientific community in general contribute to identifying and strengthening the links between Carpathian Convention activities, Informal, and Formal education?
 - Could Universities (and other CC stakeholders) play a role in supporting teachers, and governments in integrating local / Carpathian issues into the curriculum?
- **Informal / Nonformal Education**
 - How specifically do Convention activities relate to / fit into the Informal education?
 - How can we integrate / strengthen learning / informal education components of Carpathian Convention activities?
 - Which activities can we address?
 - Who can play a role in integrating educational components, and how?
- **Formal Education**
 - Which inputs and recommendations can we provide to Formal education, based on our activities?
 - How much space for local / Carpathian issues is there in the Formal Education / school and university curricula?
 - What good examples we see of ESD is embodied in practical teaching-learning?
 - How those schools/teachers use the curricula and textbooks, how they learn to be able to perform quality ESD?
 - What obstacles do they overcome and how?.

⁶ <http://www.ceeweb.org/stcdb/>

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Annex 2. Abstracts submitted to the session *Best practices of education for sustainable development in the Carpathians and other mountainous regions*.

Recommendations for stronger integration of education for sustainable development into the Carpathian Convention: results of a participatory process

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The Carpathian Convention is a framework agreement focused on nature conservation and the sustainable development of the Carpathian Mountain region. It's Article 13 outlines provisions for awareness raising, education, and public participation, and as such, it is central to integrating Education for Sustainable Development (ESD) into the Convention documents and activities. The authors have been involved in ESD-related processes of the Convention since 2007, and have worked to bring the Convention activities in line with the guidance provided by the United Nations, including the recently adopted ESD 2030 Framework of the United Nations Educational, Scientific and Cultural Organization (UNESCO). We have conducted a review of the Convention documents and the results of participatory workshops, focused on ESD and implemented in 2018–2019. We would like to present the highlights of the participatory ESD-related processes of the Carpathian Convention and provide recommendations for further integration of ESD, including: (1) establishing a Convention working group or network of experts focused on education and awareness raising, and (2) facilitating stronger support for ESD by the Convention presidency.

Keywords: *mountain region; education; sustainable development; regional agreement*

We would like to acknowledge the inputs provided by the Hungarian experts and ESD focal points from the Ministry of Human Capacities and Agriculture, Mónika Réti and Zita Márta Gellér, co-organizers of the first Carpathian ESD Seminar in April 2019. The seminar provided an important opportunity for discussion on and exchange of experience with respect to ESD activities within the Convention, and elaboration of preliminary recommendations.

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UNECE [United Nations Economic Commission for Europe]. 2016. Ten years of the UNECE Strategy for Education for Sustainable Development. Evaluation report on the implementation of the UNECE Strategy for Education for Sustainable Development from 2005 to 2015. Report No. ECE/CEP/179. New York, NY, and Geneva, Switzerland: United Nations. <https://www.unece.org/environmental-policy/education-for-sustainable-development/education-for-sustainable-development-esdpublicationshtml/education-for-sustainable-development/2016/10-years-of-unece-strategy-for-education-for-sustainable-development/doc.html>; accessed on 26 April 2020.

⁷ Attila Varga's work was supported by the ELTE Thematic Excellence Programme 2020 supported by the National Research, Development and Innovation Office (TKP2020-IKA-05)

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UNESCO [The United Nations Educational, Scientific and Cultural Organization]. 2019. Framework for the Implementation of Education for Sustainable Development (ESD) Beyond 2019. <https://unesdoc.unesco.org/ark:/48223/pf0000370215>; accessed on 25 April 2020.

UN [United Nations]. 2015. Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: The 2030 Agenda for Sustainable Development. General Assembly Report No. A/RES/70/1. New York, NY: UN. Available at: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (accessed on 8 February 2018).

Bringing primary school pupils closer to environmental education. Proposal for a field itinerary in Romanian Carpathian Mountains

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In teaching the environmental sciences, the professor has the role to ensure the bond between students' previous and new knowledge about the processes and phenomena that govern the smooth running of natural processes, without resorting to memorising "by heart". In like manner, bringing students closer to nature may help strengthen their ability to cope with various situations of anthropogenic impact on the environment. In light of these understandings, education for environmental sustainability is of particular importance for the development of pro-nature awareness among the youth.

In the quest for those cognitive abilities aiding second-grade target pupils fathom the societal environmental issues, the current research aims to propose and test an exploratory teaching approach, upholding their comprehension of abstract notions currently used in earth sciences. The joint "Mathematics and environmental exploration" curriculum for the second-grade level in Romanian elementary schools outlines a logical framework for teachers to instill in their students an ecological behavior in favor of nature. The vast majority of notions in the curriculum can be taught via thematic trips, prioritizing game-type activities, observation and understanding by the pupils of different phenomena and geographical realities, with the teacher acting as a shadow moderator of the discussion.

For this case study, the proposed itinerary covers the southern Romanian Carpathians, with the following points of interest: Bucharest – Ploieşti – Câmpina - Sinaia- Braşov - Bixad - Sfânta Ana Lake - Braşov – Buzău - Bucharest. This itinerary can be covered in 3 days, preferably between April and May, and it is intended for pupils in Bucharest. The evaluation of the achievement of the objectives can be done all along the trip. The teaching methods and experimental activities are defined in accordance with the specificity of the natural factors (geology, relief, climate, water, soil, vegetation floors from forests to alpine pastures) and anthropic pressures observed on the field. The results are expected after the Covid-19 pandemic, when field applications will be possible. We envisage to improve students' ability to respond to environmental issues and to encourage a proactive attitude in full understanding of human influence on nature in the Carpathian context.

Keywords: *environmental education, Carpathian Mountains, empirical learning, sustainability, field trip*

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BioLearn – project about how to use biomimicry in education for sustainability

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BioLearn (Learning from Nature - Biomimicry in Education) project, supported by Erasmus+ strategic partnership, started in September 2018 and will end in August 2021. Partners of the project include: Magosfa Foundation, Hungary; SEVER, Czech Republic; CEA, Slovakia; Biomimicry NL, the Netherlands; Wild Awake, United Kingdom and the Center for Learning with Nature, U.S.A..

The aim of the project is to elaborate educational modules for students aged 11-16 and their teachers in the topic of biomimicry. Biomimicry is a design method that uses knowledge from nature as inspiration for sustainable design. It is an interdisciplinary approach that brings together nature, biology, design and technology.

The design process can be made in two ways: 1) The first starts with observing a natural object and continues with the question: 'what can we learn from this?'; 2) The second starts with a given challenge and the question is, 'How would nature solve this challenge?'

Biomimicry has 9 principles according to J. M. Benyus (2002) – these fit very well to the paradigm of sustainability and describe how nature operates:

1. Nature runs on sunlight
2. Nature uses only the energy it needs
3. Nature fits form to function
4. Nature recycles everything
5. Nature rewards cooperation
6. Nature banks on diversity
7. Nature demands local expertise
8. Nature seeks balance
9. Nature taps the power of limits

The method of biomimicry can be well used in teaching STE(A)M (science, technology, engineering, arts, mathematics) subjects. As we can learn from nature how to operate the world sustainable, it is a great tool also for educators for sustainability.

In the presentation we will introduce biomimicry and, briefly, some of our 22 modules (<https://biolearn.eu/universal-manual/>). Some of the modules are about introduction to biomimicry: the methods and the 9 principles; the other modules are about certain challenges, like packaging, sustainable buildings, health, plant protection, water management, climate change or cooperative problem solving.

Keywords: *biomimicry, sustainability, learning from nature, educational modules*

References:

Benyus, J. M. (2002). *Biomimicry – Innovation Inspired by Nature*. William Morrow, New York, U.S.A.

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Respect nature in the Carpathians

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The Carpathians are being impacted by a rising number of visitors. Therefore, raising awareness and providing education on proper behaviour in nature is critical, contributing to minimise the impact visitors have on nature.

Respect Nature is an initiative of the European Wilderness Society, which aims to spread awareness and train people to protect the nature we love. This is achieved through the provision of guidelines on appropriate behaviour in the great outdoors. The Respect Nature initiative offers key guidelines to support nature conservation as well as further sustainable tourism development in Europe, particularly in the Carpathians.

Respect Nature's 9 principles help to communicate the guidelines on how to behave in nature without harming it:

1. Know where you go
2. Stay on trails
3. Minimise camping impact
4. Keep nature clean
5. Make fire responsibly
6. Show respect
7. Respect wildlife
8. Respect others
9. Respect livestock protection

Respect Nature offers educational posters and folders, and outdoor signs in various sizes, as well as online and offline trainings focused on sustainability in the outdoors. The aim of this presentation is to introduce the Respect Nature initiative and its recent pilot implementation in Ukraine, where:

- 57 Protected areas of Ukraine have already completed the Respect Nature training course
- 1000 posters and 500 folders are being distributed among Ukrainian protected areas, schools, tourism and environmental state administrations, NGOs
- Carpathian Biosphere Reserve and National Nature Park Synevyr are equipped with 8 big bilingual (Ukrainian-English) outdoor and 36 small signs and there is demand for more
- Respect nature module became a part of the "Sustainable Green Tourism School", launched in 2020, so far 161 participant
- Number of indoor and outdoor Respect nature trainings conducted for youth in Ukraine and Austria.

These tools will be soon available in over 20 European languages.

Respect nature poster and folder in English for download are available [here](#).

Keywords: *Respect Nature, sustainable tourism, Carpathians, visitor education*