https://doi.org/10.26565/2410-7360-2025-63-28
UDC 910.1:[37.017:502.15](100+477)
Received 20 April 2025
Accepted 17 October 2025

Integrating Sustainable Development into Geographical Education: From Global Perspectives to the Case of Ukraine

Kateryna Sehida [1]
DSc (Geography), Professor, Head of the K. Niemets Department of Human Geography and Regional Studies, [1] V.N. Karazin Kharkiv National University, Kharkiv, Ukraine,
e-mail: kateryna.sehida@karazin.ua, https://orcid.org/0000-0002-1122-8460;
Carla Sofia Santos Ferreira [2]
PhD, Applied Research Institute, Research Centre for Natural Resources Environment and Society (CERNAS), [2] Polytechnic Institute of Coimbra, Bencanta, Coimbra, Portugal,
e-mail: carla.ferreira@ipc.pt, https://orcid.org/0000-0003-3709-4103;
Nataliia Husieva [1]
PhD (Geography), Associate Professor of the K. Niemets Department of Human Geography and Regional Studies,
e-mail: nataliya.guseva@karazin.ua, https://orcid.org/0000-0002-3620-1213;
Kateryna Kravchenko [1]
PhD (Geography), Associate Professor of the K. Niemets Department of Human Geography and Regional Studies,
e-mail: kateryna.kravchenko@karazin.ua, https://orcid.org/0000-0003-4654-3185;
Liudmyla Kliuchko [1]
PhD (Geography), Associate Professor of the K. Niemets Department of Human Geography and Regional Studies,
e-mail: ludmila.klychko@karazin.ua, https://orcid.org/0000-0001-6937-3364;
Hanna Kucheriava [3]
PhD (Geography), Dean of the Faculty of Tourism, Business, and Psychology, [3] Kyiv National Linguistic University, Kyiv, Ukraine,
e-mail: hanna.kucheriava@knlu.edu.ua, https://orcid.org/0000-0002-1742-0605;
Olha Suptelo [1]
PhD (Earth Sciences), Associate Professor of the K. Niemets Department of Human Geography and Regional Studies,
e-mail: olha.suptelo@karazin.ua, https://orcid.org/0000-0003-2901-8565
Ievgeniia Telebienieva [1]
PhD (Geography), Associate Professor of the K. Niemets Department of Human Geography and Regional Studies,
e-mail: eugene.telebeneva@karazin.ua, https://orcid.org/0000-0002-7013-8836;

ABSTRACT

Today society is facing a number of very acute problems unable to be solved even in the developed world. Problems are especially acute in interaction of the system "society - economy - nature". Global transformations taking place in society, related to overcoming systemic crises and contradictions as well as transition of humanity to a new way of civilizational development require evolution of sustainable development policies and strategies for education. Geography should be the core, the basis of the educational standard of education for sustainable development, because geography is interdisciplinary in nature and includes knowledge, concepts, competencies about nature and society, their interaction is pretty much important. Taking into account current trends in reforming the education system in Ukraine, including the higher education, the uncertain place of geography in the knowledge system require finding ways to transform educational programs and curricula with increased practical training and emphasis on formation of competencies in demand for the labor market. This requires use of a comprehensive interdisciplinary approach.

This article aims to identify the key features of ESD globally, and in particular, in Ukraine, by analyzing literature that address and substantiate ESD-related issues. It highlights best international practices in this field, examines the potential of geographical education for SD, and outlines the role of geographical education at all levels of the education system – particularly in higher education in Ukraine - from a sustainable perspective. Additionally, the study explores the implementation of educational programs within Ukraine´s free economic education system, identifying both existing opportunities and challenges. The focus on Ukraine is particularly relevant due to the transformation of its education system, shifting toward European integration.

Results. This study examines ESD in Ukraine through global forum analyses and best practices worldwide. It identifies the potential of geographical education in promoting SD and evaluates the implementation of educational programs in Ukraine. Furthermore, it underscores the importance of social geography, whose methodologies align with ESD needs. Geography, as an interdisciplinary and sustainability-focused science, offers significant potential for ESD. The school geography curriculum already incorporates key SD principles, but their full realization requires diverse teaching methods and teacher engagement. In Ukraine's higher education,

geography should be recognized as a core discipline across all specialties, aligning with international ESD standards. Education, as the largest social system shaping public consciousness, must embed sustainability values beyond formal education to drive ethical and sociocultural progress. Ignoring sustainability in education risks perpetuating unresolved global, regional, and local issues. In Ukraine's higher geographical education, defining its role, improving curricula, and strengthening human-geographical education based on sustainability principles should be a research priority.

***Keywords**: education for sustainable development, goals and objectives of sustainable development, geographical education, human geography, educational competencies for sustainable development, education system, educational programs, Ukraine.*

In cites: Sehida Kateryna, Santos Ferreira Carla Sofia, Husieva Nataliia, Kravchenko Kateryna, Kliuchko Liudmyla, Kucheriava Hanna, Suptelo Olha, Telebienieva Ievgeniia (2025). Integrating Sustainable Development into Geographical Education: From Global Perspectives to the Case of Ukraine. *Visnyk of V. N. Karazin Kharkiv National University. Series Geology. Geography. Ecology*, (63), 382-397. https://doi.org/10.26565/2410-7360-2025-63-28

Introduction

In the 21st century, global society faces several pressing challenges that cannot be resolved in isolation, even by the most developed countries. These global issues, impacting both natural and social subsystems across the planet, are escalating at a rapid pace. The challenges are particularly pronounced at the intersection of social, economic and natural systems. The environment is rapidly losing its ability to self-regulate and restore balance across its subsystems, which have been disrupted by human activities. This imbalance is evident in climate change and the increasing frequency of natural disasters worldwide (Evans et al., 2021, Kalantari et al., 2023). Amid these environmental challenges, socio-economic problems are worsening, manifesting as poverty, hunger, terrorism, and escalating armed conflicts. Many of these crises stem from disputes over natural resources, employment opportunities, demographic shifts, and other critical factors. The ecological condition of the natural environment of many regions of the planet is rapidly deteriorating, causing negative effects on human health (Kalantari et al., 2023). Humans, as integral components of global society, are at the core of these issues and the negative changes affecting the Earth. Their increasing demands are incompatible with the planet's biosphere's capacity to sustain them. Human survival depends on constant interaction with the natural environment and the consumption of its resources, creating a complex system of direct and reciprocal relationships. Without effective solutions to these challenges, the planet risks irreversible damage and potential collapse (Evans et al., 2021). is rapidly approaching this critical limit, a topic that is consistently discussed at the highest levels and draws the attention of the global community (UNITED NATIONS, 1972; Botkin et al.,1979; United Nations, 1987; United Nations, 1992a, 1992b;Elias, 2003; Statement by the Ministers of the Environment…, 2003; UNECE, 2005;UNDP, 2015; United Nations, 2015; UNESCO, 2016; United Nations, Economic and Social Council, 2019; Ministry of Economic Development and Trade of Ukraine, 2017; Club of Rome, 2021; UNDP, 2024).

Therefore, humanity, as a global society, must rethink its priorities, reassess its needs, and adopt limitations where necessary. Sustainable existence and development are impossible without continuous interaction with the environment, fostering environmental awareness, and shaping a global mindset within the "Human-Society-Nature" system. We are talking about developing educational foundations for sustainable development (SD). It must be proactive, widespread in different regions of the world and supported by all countries. Such education must provide knowledge, form practical skills, competencies for existence in the global system "Human-Society-Nature". The current education system remains predominantly human-centric and must shift toward nature-centric principles, embracing an anticipatory approach. This transformation must be integrated at all educational levels to foster environmentally conscious generations capable of addressing the challenges of sustainability (Potocki et al, 2023). As an interdisciplinary field, geography has potential to provide a comprehensive understanding of the Earth's landscapes, considering both natural and socio-geographical features. It fosters spatial thinking and enhances awareness of the interactions between society and the environment, playing a crucial role in sustainable resource management. The geographical component of education is fundamental in shaping knowledge, skills, attitudes and practices aligned with the goals of sustainable development. It equips individuals to make informed decisions that ensure the survival and well-being of both present and future generations (Niemets, 2023). In many countries of the world, such as Ukraine, Niger, Ethiopia, the challenge of providing quality education for sustainable development remains pressing and unresolved. However, integrating geographical education into sustainability initiatives addresses modern challenges, contributes to global sustainability efforts, improves quality of life, and promotes the harmonious coexistence of humans and nature.

Considering the above, several questions remain open: what are the origins of educational concepts for sustainable development (SD)? What is significance and content of quality education as one of the 17 Sustainable Development Goals (SDGs) for 2030? What are the key aspects of implementing and advancing education for sustainable development (ESD)? How

can geographical science contribute to ESD? And what is the potential, content, and significance of geographical ESD in Ukraine?

This article aims to identify the key features of ESD globally, and in particular, in Ukraine, by analyzing both scientific and grey (e.g. global forum and conference documents, educational programs and documents) literature that address and substantiate ESD-related issues. It highlights best international practices in this field, examines the potential of geographical education for SD, and outlines the role of geographical education at all levels of the education system – particularly in higher education in Ukraine - from a sustainable perspective. Additionally, the study explores the implementation of educational programs within Ukraine´s free economic education system, identifying both existing opportunities and challenges. The focus on Ukraine is particularly relevant due to the transformation of its education system, shifting toward European integration.

The origins of educational concepts for sustainable development. The 20th century faced increasing challenges in the interaction between society and nature, prompting global efforts to address environmental issues. Various countries intensified nature protection measures, and the establishment of the United Nations and the Club of Rome marked the beginning of systematic research into long-term environmental and socio-economic challenges (Figures 1, 2).

A major milestone was the 1992 Earth Summit

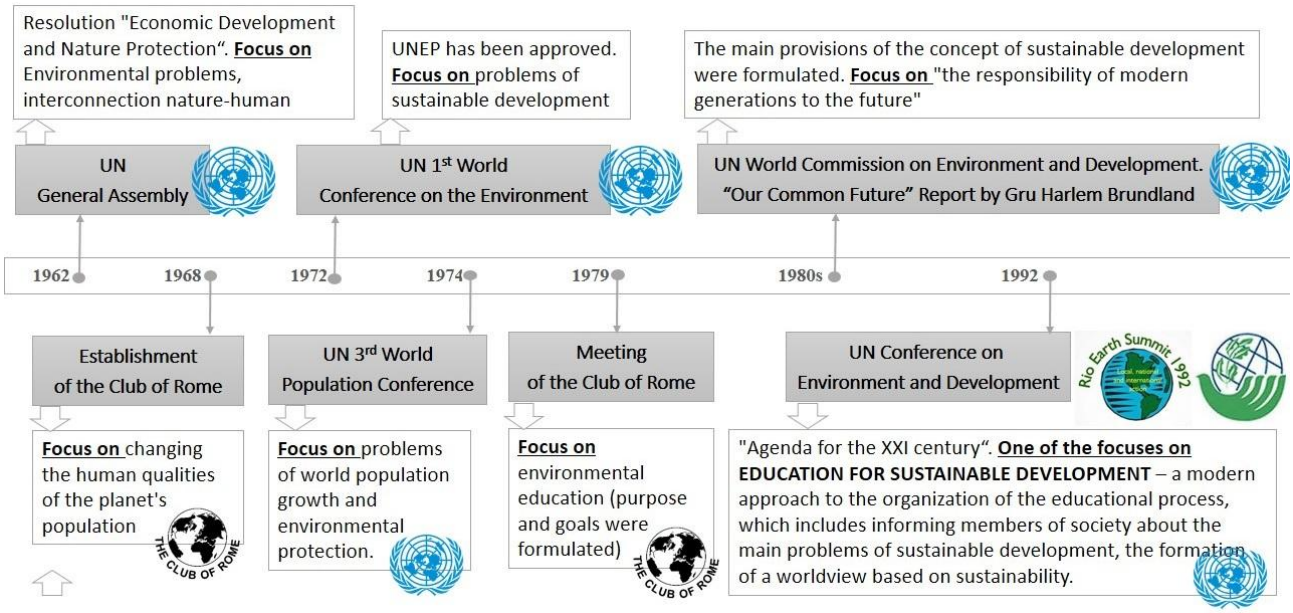

Fig. 1. Origins of ideas for sustainable development education XX (compiled by the authors according UNITED NATIONS, 1972; Botkinet al.,1979; Our Common Future, 1989; United Nations, 1992a, 1992b; Elias, 2003; Statement by the Ministers of the Environment…, 2003; UNECE, 2005;UNDP, 2015; United Nations, 2015; Education 2030. Incheon Declaration…, 2016; Long-term strategy for the Convention until 2030; Ministry of Economic Development and Trade of Ukraine, 2017; Club of Rome, 2021; http://hdr.undp.org/en/global-reports)

in Rio de Janeiro, where the Agenda 21 was adopted, emphasizing the crucial role of education in promoting sustainable development (United Nations, 1992a). This spurred global discussions on ESD (United Nations, 1992b). In 1993, the EU Maastricht Treaty introduced the concept of a "European dimension in education," highlighting the need for environmental knowledge, practical skills, and competencies for sustainability. As the concept of sustainable development gained global traction, education emerged as a key factor in shaping a new quality of life and economic progress. Higher education, in particular, was recognized as fundamental to national security, economic stability, and overall well-being.

The current concept of ESD is based on the Belgrade Charter (UNESCO, 1975), the Tbilisi Declaration (UNESCO and UNEP, 1977), the University Charter for Sustainable Development (Copernicus - The University Charter…), and the Saloniki Declaration (UNESCO-EPD, 1997). In 2000, the United Nations (UN) Millennium Declaration, signed by 189 states and governments, set out eight Millennium Development Goals (MDGs), including Goal #2: Universal Primary Education, aiming to provide full primary education for all children. In 2002, the UN General Assembly unanimously adopted a resolution "On the UN Decade of ESD", which further solidified education as a foundation for sustainable societies. It emphasized the integration of sustainability principles into education at all levels, and strengthened international cooperation in developing innovative educational policies and practices. The 2015 UN

Summit on Sustainable Development in New York, with participation from 193 countries, resulted in the adoption of the Agenda 2030, outlining 17 Sustainable Development Goals (SDGs) (United Nations, 2024). Among them, Goal #4 aims to provide inclusive, equitable, and quality education while promoting lifelong learning opportunities. At the 2015 UNESCO General Conference in Paris, world leaders emphasized the role of education in implementing the SDGs, particularly through investment in research and innovation (UNESCO, 2016). This was further explored in 2016 at the Batumi Ministerial Conference, which assessed ESD progress and outlined future strategies (United Nations, Economic and Social Council, 2019).

In Ukraine, the origin of ESD is dated to 2003,

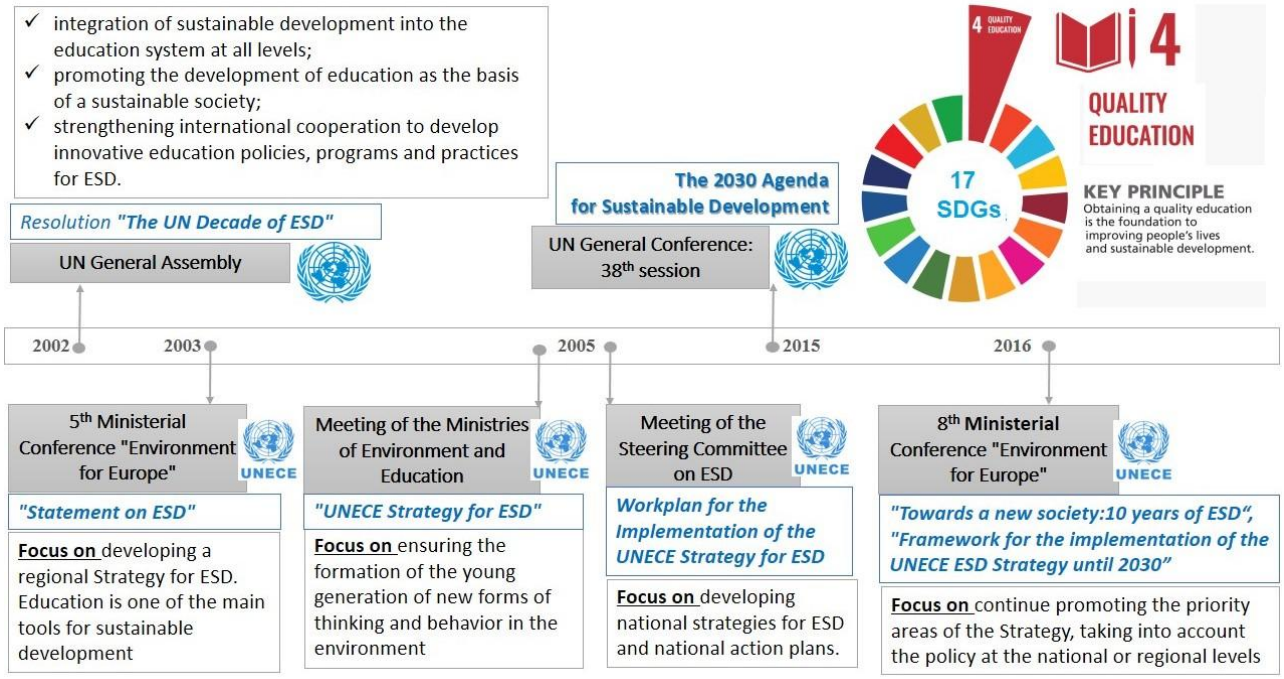

Fig. 2. Origins of ideas for sustainable development education XXI (compiled by the authors according UNITED NATIONS, 1972; Botkinet al.,1979; Our Common Future, 1989; United Nations, 1992a, 1992b; Elias, 2003; Statement by the Ministers of the Environment…, 2003; UNECE, 2005;UNDP, 2015; United Nations, 2015; Education 2030. Incheon Declaration…, 2016; Long-term strategy for the Convention until 2030; Ministry of Economic Development and Trade of Ukraine, 2017; Club of Rome, 2021; http://hdr.undp.org/en/global-reports)

when the Kyiv Statement on ESD reinforced education as a tool for environmental protection and sustainability (Statement by the Ministers of the Environment…, 2003). This was further discussed at the 2005 UNECE Conference in Vilnius (Lithuania) (UNECE…, 2005).

ESD is evolving into a broad and interdisciplinary approach, addressing environmental, economic, and social challenges. It requires shifting from knowledge transmission to problem-solving and critical thinking, empowering individuals to develop solutions for sustainability. Successful implementation depends on strong political support at all governance levels and the integration of sustainable development principles across all education systems.

Quality education as a key pillar for the 2030 sustainable development

The importance and challenges of ESD as one of the SDGs. ESD empowers individuals to adopt new ways of thinking and take action toward a sustainable future (UNESCO. ESD, 2025). It equips students with the knowledge, skills, and values necessary to make informed decisions and take responsible actions for environmental integrity, economic viability, and social well-being, while embracing cultural diversity (UNESCO. Institute for Statistics, 2025). As a lifelong learning process, ESD is an essential component of quality education. The European Commission defines competences for lifelong learning as a combination of knowledge, skills and attitudes (European Commission, 2019).

In line with this, UNESCO seeks to expand access to quality ESD at all levels and in various social contexts. A reorientation of education is urgently needed to foster sustainability-focused knowledge, skills, and behaviors. Key global challenges – such as climate change, deforestation, biodiversity loss, ocean pollution, gender inequality, and hunger – demand an integrated approach in education. By incorporating these issues into curricula from an early age,

education can nurture ecological awareness and active citizenship, ensuring that individuals take responsibility for sustainable decision-making (UNESCO. ESD, 2025).

The 2030 SDGs recognize ESD as a fundamental part of quality education. Goal 4.7 directly relates to ESD, emphasizing the need for educational programs that promote sustainability (Knowledge Platform. 2024). Goal 4 – which ensures inclusive, equitable, and quality education – aims to provide free, quality primary and secondary education for all by 2030. Additionally, it emphasizes the accessibility of affordable and high-quality higher education regardless of gender (United Nations. Department of Economic and Social Affairs, 2024).

Given the increasing complexity of global challenges, the 17 SDGs provide a framework for addressing sustainability at local and regional levels. Quality education is not only a goal in itself but also a key enabler for achieving other SDGs. Its role in global development is profound, as education is a crucial investment that shapes the well-being of future generations and the sustainability of the planet (United Nations. Department of Economic and Social Affairs, 2024).

To meet the demands of the 21st century, education must foster values and competencies aligned with sustainable development. Achieving the SDGs requires investment in human potential, as people are the driving force behind progress. Education plays an increasingly vital role in global development, and international organizations have issued strategic recommendations to align educational systems with sustainability goals (Figure 3).

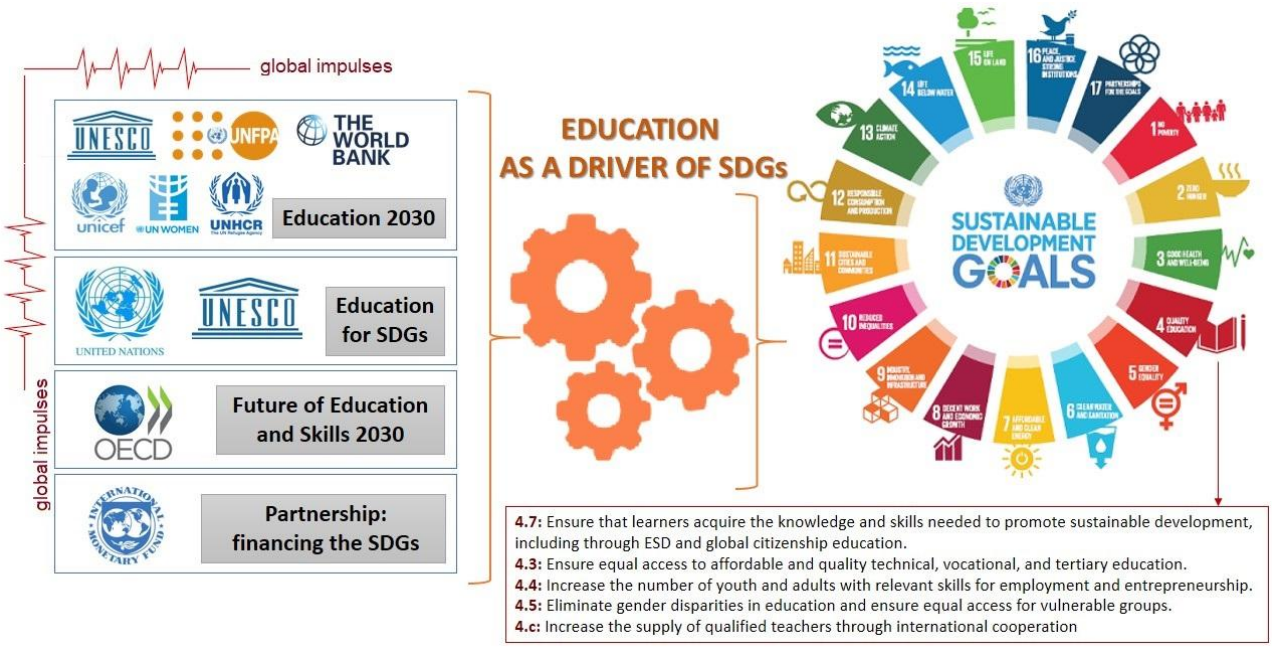

Fig. 3. Global impulses for education as a driver of Sustainable Development Goals (compiled by the authors)

UNESCO has developed comprehensive guidelines for integrating ESD into educational policies and curricula. By embedding sustainability principles at all levels – from individual course modules to national education strategies – societies can enhance responsible decision-making and collective engagement in sustainable development. The successful implementation of these recommendations will ensure that education remains a powerful tool for creating a more sustainable world.

Key priorities in ESD. As outlined in the Education-2030 Incheon Declaration, governments must provide political leadership in education, guide the contextualization of policies, and ensure the effective implementation of SDG 4 – Education-2030. Integrating education planning into poverty reduction and sustainable development strategies is crucial for achieving long-term sustainability goals. Many countries have demonstrated strong commitments to incorporating sustainable development principles into education at all levels. A notable example is the UNESCO agreement with the French Ministry of Education, signed on January 14, 2021, to establish the Office for Climate Education (Office for Climate Education, 2024). This center aims to strengthen climate change education worldwide, fostering greater awareness and action (UNESCO and France enhance Climate Change Education worldwide, 2021).

ESD requires teaching and learning approaches that inspire and equip students to change behaviors, engage in problem-solving, and take action for sustainability. It fosters key competencies such as critical thinking, scenario planning, and collaborative problem-solving (UNESCO Almaty, 2018). More

than just an educational framework, ESD is a philosophy, a mindset, and a way of life. It is often seen as a catalyst for educational innovation, fostering collaboration among schools, universities, communities, businesses, and policymakers. Today, ESD principles are embedded in multiple global action frameworks and conventions, including:

• Climate changes - Article 6 of the UN Framework Convention on Climate Change (UNFCCC);

• Biodiversity - Article 13 of the Convention on Biological Diversity (CBD);

• Chios Framework Program of Action for Capacity Building;

• Sustainable Consumption and Production Program (2012-2021).

Education lays the foundation for personal development, critical thinking, moral values, and problem-solving skills. It equips individuals with the necessary tools to adapt to global challenges and drive sustainable innovation.

Key principles of ESD:

• Empowerment for Responsible Decision-Making

ESD enables individuals to make informed decisions that preserve environmental integrity, ensure economic sustainability, and promote civil responsibility for future generations while respecting cultural diversity.

• Lifelong learning and quality education

ESD is not confined to formal education; it is an ongoing process that enhances personal, professional, and social competencies.

• Holistic approach across curricula

ESD must be integrated into all subjects and learning environments, ensuring sustainability concepts are reflected in teaching outcomes.

• Key curriculum themes

Curricula should incorporate fundamental sustainability concepts, including climate change; biodiversity and conservation; environmental safety; sustainable consumption and production; resource and energy efficiency; and human-environment relationships.

• Blending traditional knowledge and innovation

Effective ESD combines traditional cultural knowledge with modern interactive methodologies, fostering creative problem-solving and critical thinking.

• Global citizenship and public engagement

ESD fosters the development of global citizens who actively engage in regional and global sustainability efforts. Through citizen science initiatives, individuals can participate in environmental monitoring, decision-making, and sustainable solutions, particularly in geographical education.

• Learning outcomes: critical thinking and collective action

ESD cultivates key professional competencies, including critical and systemic thinking, collaborative decision-making, and accountability for current and future generations (Vincent and Mulkey, 2015).

Key aspects of implementing education for sustainable development worldwide

Experience in implementing ESD. In recent years, ESD has become a key driver of sustainability and a catalyst for innovation in education. It integrates various sectors – including schools, universities, communities, and the private sector – into creative solutions for global challenges (UNESCO, 2012).

About 100 countries have established national coordinating bodies for ESD, recognizing its relevance. However, in some cases, implementation remains theoretical, lacking integration into curricula. UNESCO reports that 59% of countries have taken action on biodiversity education, with 95% incorporating it into primary education, 100% into secondary education, 83% into higher education and 85% into teacher training (UNESCO, 2012, p.18).

Research highlights diverse ESD approaches, such as transformational learning, which fosters changes in habits, attitudes, and behaviors regarding environmental issues, resource consumption, and climate change (Mezirow, 1997; Mezirow and Associates, 2000; Morrell and O'Connor, 2002; Morar et al., 2021). ESD is present at all educational levels, from preschool to lifelong learning, enhancing emotional engagement and personal responsibility.

Using focus groups, policy analysis, and non-formal curricula, Adams et al. (2021) found that ESD strengthens local implementation, even in countries lacking national policies or educational resources. Similarly, a study across 18 countries that received high scores from the Program for International Student Assessment (PISA) related to the contribution of ESD to quality education (Laurie et al., 2016), found that ESD improves academic performance, critical thinking, and research skills. Another study in 14 countries worldwide revealed that students with ESD schools develop stronger critical thinking skills, a deeper understanding of research topics and better research skills. Students of free educational institutions and colleges of Germany, Finland, Scotland demonstrate excellent communication, writing and mathematical skills, while Korea shows strong problem-solving skills, and Estonia fosters independent thinking. Some ESD strategies also promote collaboration, equity, and diverse problem-solving perspectives (Nolet, 2015).

Regional differences in the implementation of ESD. The UNESCO report "Learn for our planet" (2021) highlights significant regional differences in integrating SD into curricula. Analyzing nearly 50 countries, the study found national curricula referen-

ced environmental issues more frequently than educational plans. However, over half did not mentioning climate change, and only 19% addressed biodiversity. While "environment" appeared in 83% of documents and "sustainability" in 69%, "climate change" and "biodiversity" were cited in just 47% and 19%, respectively. Subjects like biology, science, and geography most often included SD-related content.

A notable global ESD initiative is Finland's "HundrEd project", launched in 2015, which curates pedagogical innovations for sustainable development (HundrED Research, 2024). Italy's Reggio Emilia approach fosters creativity through outdoor learning of young children (Reggio Emilia Australia Information Exchange, 2024). Colombia's Escuela Nueva model enhances transversal competencies in 16 countries (Aldawsari, 2018).

The EU takes a broader approach to SD than the U.S., incorporating climate change, responsible consumption, resource management, energy, green transport, health, poverty, migration, and social adaptation. The European Commission's publication "An updated strategic framework for European cooperation in education" (2020) promoted ESD cooperation, while the "Lifelong Learning Program (2007-2013)" was the first tool to enhance education's role in sustainability. Academic freedom remains a core university principle in Sweden (Sammalisto and Brorson, 2008), Portugal (Ferreira et al.,2014), France (Gombert-Courvoisier et al., 2014), Czech Republic (Labodova et al., 2014) and Central and Eastern Europe regions (Adomssent et al., 2014).

Potential of geography to provide ESD

The integration of ESD into the curriculum is essential across disciplines. UNESCO's recommendations on 21st-century education (Reinfried et al., 2007) recognize geography, alongside philosophy, history and foreign languages, as a pillar of universal knowledge. Geographical education plays a key role in understanding global challenges and fostering sustainable development. Thus, developing geographical competencies in students is crucial at all educational levels.

Geography provides a comprehensive framework for understanding global issues, integrating natural and social sciences. As Meadows (2020) states, geography is the "science of sustainable development," offering methodological tools that bridge society and nature through spatial models (Maude, 2017, Meadows, 2020, Nemets, 2012). Its integrative nature supports ESD by fostering resilience, environmental awareness, and sustainability-oriented behaviors. Geographical education nurtures ecological worldviews, ethical decision-making, and practical actions for environmental protection. It develops knowledge across philosophical, natural, legal, social, economic, and technical domains, promoting balanced and sustainable development.

The Lucerne "Declaration on Geographical ESD" (Reinfried et al., 2007) emphasizes the importance of geography in sustainability education, highlighting key concepts such as location, spatial interaction, and environmental systems. Sustainable development requires education to reorient societal values, production, and consumption toward ecological balance. Contemporary perceptual geography enhances understanding of territories through spatial analysis, helping students grasp the consequences of human actions (Meadows, 2020; Nemets, 2016).

The International Geographical Union (IGU) promotes best practices in geographical education. The 2016 International Year of Global Understanding, launched in Jena, Germany, reinforced geography's role in bridging science, governance, and civil society for sustainability. IGU initiatives focus on defining core geographical knowledge, improving public perceptions of geography, and disseminating research on climate adaptation, biodiversity, and urban planning. These efforts ensure geography remains a leading discipline in ESD (Global understanding, 2025).

Despite being proclaimed in 2016, the principles of the International Year of Global Understanding remain highly relevant. Scholars continue to emphasize geography's role in ESD, advocating for its integration across educational levels (Bednarz et al., 2007; Reinfried et al., 2007; Mellalieu, 2008; Demirci et al., 2018; Sprenger and Nienaber, 2018; Meadows, 2020). The International Charter of Geographical Education (International Geographical Union, 2016) affirms geography's importance in understanding the "society–economy–nature" system and fostering sustainability. Students must acquire the necessary knowledge and competencies to actively contribute to sustainable development. By focusing on human-environment interactions, geography equips learners with the tools to address global sustainability challenges effectively.

Geographical ESD in Ukraine

Post-Soviet Transition and Educational Reforms in Ukraine. After regaining independence from the Soviet Union in 1991, Ukraine undertook significant reforms to move away from the Soviet model, which had deeply influenced its education system, economy, and governance. The 2004 Orange Revolution and the 2014 Euromaidan protests were pivotal in Ukraine's ongoing struggle for democracy and its alignment with European values.

A major milestone in this transition was the signing of the Association Agreement with the European Union in 2014, which aimed to align Ukraine's policies and standards with those of the EU. This shift toward European integration brought profound changes to the education system, particularly in

moving away from a russian-centric approach. Educational reforms focused on modernizing curricula, improving teacher training, and incorporating sustainable development principles into education.

One of the most notable changes was the promotion of critical thinking, civic responsibility, and alignment with European educational norms. There was also a concerted effort to reduce the dominance of the russian language in education, emphasizing Ukrainian as a means of strengthening national identity.

Integration with Europe has also led to an increased focus on ESD. However, Ukraine's geopolitical challenges have shaped its ESD priorities differently from those of more stable nations. While many countries emphasize holistic development and environmental sustainability, Ukraine's efforts often center on resilience, security, and post-conflict recovery.

A key challenge remains the need for extensive teacher training and resources to effectively implement ESD principles in classrooms. Many educators lack access to professional development programs, a contrast to countries where ESD training is well-established. Additionally, public awareness of sustainable development issues is still growing, and while some aspects of ESD have been integrated into specific subjects, a comprehensive national framework is still evolving.

Institutional support of ESD in Ukraine. The integration of SDGs into education worldwide has seen significant progress. Since the introduction of sustainable development principles, leading universities have incorporated these ideas into curricula, research, and interdisciplinary collaboration. Universities play a crucial role in training professionals who understand sustainable development and its societal impact, particularly in leadership roles (e.g. management positions). Great progress has been made in the higher education to implement sustainable development, from the classroom, to research and cooperation with stakeholders.

The High-Level Political Forum on Sustainable Development 2020 (United Nations. High-level Political Forum on Sustainable Development, 2024), emphasized higher education's fundamental role in achieving all 17 SDGs. Major academic organizations – Agence Universitaire de la Francophonie (AUF, 2025), the Association of Commonwealth Universities (The Association of Commonwealth Universities, 2025) and the International Association of Universities (International Association of Universities, 2025) – stressed the need for universities to lead in addressing poverty, environmental protection, gender equality, and cultural understanding. They highlighted the importance of global cooperation, interdisciplinary research, and knowledge-sharing to drive sustainable. There are already concerted efforts to advance the 2030 Agenda within the higher education and to promote recognition of the key driving role of the higher education in achieving SDG. Nevertheless, the collaboration between education (universities) and stakeholders/administration (governing structures) for decision-making regarding the SDGs is still not strong and evident enough (United Nations. High-level Political Forum on Sustainable Development, 2024).

Ukraine has adopted the 17 SDGs and 169 targets (United Nations. Sustainable Development Goals, 2024). However, no dedicated framework exists for integrating SDGs into educational programs, and implementation guidelines are lacking. This is despite the Law of Ukraine on the Strategy of Sustainable Development of Ukraine until 2030 (Draft Law of Ukraine On the Strategy for Sustainable Development…, 2018) specifies the legal, financial, economic, information and communication, educational and research tools on its embodiment.

Key national education objectives include "Ensure access to quality school education for all children and adolescents; Ensure the availability of quality preschool development for all children; Ensure access to vocational education; Improve the quality of the higher education and ensure its close connection with science; Increase the prevalence among the population of knowledge and skills necessary for decent work and entrepreneurship; Eliminate gender inequality among school teachers; Create modern learning conditions in schools" (United Nations Ukraine, 2024). Despite the efforts, the national report "Sustainable Development Goals: Ukraine" does not assess public awareness of SDGs or directly address SDG 4.7, which emphasizes education for sustainable development, human rights, global citizenship, and cultural diversity (United Nations Ukraine, 2024).

Despite defining educational levels (spanning from preschool, secondary education, vocational education, professional higher education and higher education) and competency standards in its Law on Education (2017) and Law on Higher Education (2014), Ukraine has not explicitly integrated SDG principles into its educational framework. While lifelong learning is recognized as a priority, participation in formal and non-formal education remains low at 9% among those aged 15–70 (United Nations. Sustainable Development Goals, 2024).

The Law on Sustainable Development Strategy of Ukraine until 2030 (Draft Law of Ukraine On the Strategy for Sustainable Development…, 2018) calls for embedding UNECE Sustainable Development Strategies into education standards across all disciplines. It underscores the role of higher education institutions in training professionals to develop and use new technologies that ensure transition of society to sustainable development, and researching solutions

for environmental, social, and economic challenges.

While progress has been made, Ukraine needs clearer policies, institutional support, and broader public engagement to fully integrate sustainable development into its education system.

The education system in Ukraine in view of the ESD. The integration of ESD in Ukraine begins at the preschool level, where children are introduced to sustainability concepts through activities that promote environmental awareness and responsible behavior. The ESD course fosters an early understanding of sustainability, encouraging children to recognize their role in preserving the Earth's resources and developing habits and patterns focused on sustainable development.

At the general secondary education level, ESD is embedded through cross-cutting content lines, which integrate key competencies across subjects (Ministry of Education and Science of Ukraine, 2021). These lines include:

- "Environmental Security and Sustainable Development" – promoting ecological responsibility and awareness.
- "Civil Responsibility" – fostering active citizenship and social engagement.
- "Health and Safety" – developing emotional resilience and a healthy lifestyle.
- "Entrepreneurship and Financial Literacy" – equipping students with economic and financial knowledge relevant to sustainability.

Beyond the classroom, extracurricular activities, such as participation in environmental clubs, nature protection societies, and involvement in projects of public organizations, further reinforce sustainability principles.

At the higher education level, universities play a crucial role in advancing ESD, influencing social, economic, and environmental policies while shaping sustainability-conscious professionals. The increasing inclusion of ESD in research, curricula, and institutional policies enhances its impact on society.

Non-formal education is also gaining importance, aligning with the European "lifelong learning" or "adult education" model. Recognized under Article 8 of Ukraine's Law on Education (2017), non-formal education obtained through educational programs and providing professional and / or partial educational qualifications, provides specialized training in financial literacy, IT, environmental awareness, and social responsibility. The COVID-19 pandemic accelerated digitalization, expanding access to online courses on sustainability topics such as "Sustainable Development: A New Philosophy of Thinking", "Online Education for Sustainable Development", "What to Do Next: Civil Servants on Sustainable Development", "What to Do Next: Communities on Sustainable Development", and "What to Do Next: Business on sustainable development".

Ukraine's education system is undergoing a transformative phase, gradually integrating ESD across all levels. While progress is evident, further alignment between formal and non-formal education is essential to fully realize the lifelong learning approach in the context of sustainable development.

The role of Geography in education for ESD in Ukraine. Geography plays a crucial role in general secondary education, equipping students with an understanding of human-environment interactions. At the general secondary education, geography is introduced through "Natural Science", which includes the discipline of "Geography", consisting of courses such as "General Geography", "Continents and Oceans", "Ukraine in the World: Nature and Population", and "Ukraine and the World Economy" (Law of Ukraine About education, 2017).

From the sixth grade onward, geography teachers foster ecological thinking, using topics that explore human-nature relationships. Practical learning through fieldwork, expeditions, and environmental initiatives further reinforces these concepts. Participation in research projects under the "Small Academy of Sciences" helps students develop analytical skills related to sustainability.

At the "Geography" profile in the secondary education level, students study "Geography: Regions and Countries" and "Geographical Space of the Earth" (Law of Ukraine About Education, 2017). Geography serves as a key subject for integrating ESD principles, addressing sustainability at global, regional, and local levels through the cross-cutting theme "Environmental Security and Sustainable Development." The subject encourages students to adopt sustainable behaviors and develop practical solutions for environmental challenges. However, challenges remain in fully aligning geography education with ESD, including curriculum design, teaching methods, and teacher training. Addressing these issues is essential for maximizing geography's potential as a foundation for sustainability education.

Higher education in Geography and sustainable development in Ukraine. Ukraine's education system is aligning with international standards, particularly through the harmonization of its List of Knowledge Areas and Specialties with the International Standard Classification of Education (ISCED-F 2013) (UNESCO, 2015). According to Ukrainian legislation (Resolution of the Cabinet of Ministers of Ukraine, 2015), Geography belongs to Field 10 – Natural Sciences, Specialty 106 – Geography. Based on ISCED-F 2013, it corresponds to three detailed fields: 0532 Earth sciences – geography (physical, natural); 0314 Sociology and cultural studies – geography (human, social, cultural); 0731 Architecture and town planning – cartography, city and regional

planning (UNESCO, 2015).

A significant change in 2024 reclassified Geography as "C6 – Geography and Regional Studies", now under "C – Social Sciences, Journalism, Information, and International Relations" (Cabinet of Ministers of Ukraine, 2024). In C6, the content for the higher education includes 0314 Sociology and cultural studies and 0532 Earth sciences (Resolution of the Cabinet of Ministers of Ukraine, 2024). The new classification better reflects geography's interdisciplinary nature and relevance to regional studies and sustainable development.

In higher education, the Bachelor's and Master's programs in Geography integrate competences defined as "Ability to solve complex specialized problems and practical problems characterized by complexity and uncertainty of conditions in professional activities in geography or in the learning process using modern theories and methods of research of natural and social objects and processes" (Ministry of Education and Science of Ukraine, 2021). *These programs* focus on solving complex spatial, environmental, and socio-economic issues using modern research methods. As of 2024, 15 universities offer undergraduate programs in Geography, including leading institutions such as Taras Shevchenko National University of Kyiv, V. N. Karazin Kharkiv National University, and Ivan Franko National University of Lviv. Master's programs are offered at 12 universities, with a strong emphasis on sustainability, regional planning, and environmental management. The PhD's programs in Geography integrate competences defined as "The ability to generate new ideas, solve complex problems in professional and/or research-innovative activities in the fields of geography, environmental management, and regional development, apply modern methodologies of scientific and pedagogical activities, and conduct independent scientific research with results that possess scientific novelty, as well as theoretical and practical significance" (Ministry of Education and Science of Ukraine, 2024). As of 2024, 5 universities offer PhD programs in Geography: Taras Shevchenko National University of Kyiv, V. N. Karazin Kharkiv National University, Odessa I.I. Mechnikov National University, Yuriy Fedkovych Chernivtsi National University, Kherson State University.

Geography programs integrate ESD through courses like "Geographical Foundations of Sustainable Development," "Sustainable Development Strategy," "Nature and Sustainable Development", "Sustainable Development: Conceptual and Indicator analysis" , "Sustainable Development of Cities and Regions", "Regional Problems of Sustainable Development", "Fundamentals of Sustainable Development of Ukraine", "Geography of Risks and Sustainable development", "Geographical Aspects of Global Problems of Mankind", and "Global Problems of Nowadays". The curriculum fosters interdisciplinary research, environmental awareness, and regional development strategies. Educational programs of human-geographical orientation, in our opinion, provide implementation of ESD, because complexity of the subject area of the study of geography, extend of problems that shape the social demand for these studies require not only to apply all the possibilities of interdisciplinary, including principles and methods of natural sciences, which allows to develop and implement new approaches to organization, modeling and forecasting of socio-geographical processes in the regional context in particular based on SD principles (Nemets, 2012, Niemets 2019, Kostrikov et al., 2018).

Despite its high academic potential, human geography in Ukraine faces challenges in aligning curricula with European standards, ensuring graduate competitiveness, and integrating modern interdisciplinary approaches (Denysyk et al., 2020, Nemets, 2012, Niemets 2023). This has led to an unclear definition of human geography specialists in the labor market. This is due to slow restructuring of all geographical education, which generated Soviet-period professionals with a very wide range of disciplines and narrow opportunities to develop and apply competencies that allow young people to be potentially competitive in the labor market. Such education is obliged to form creative thinking, the ability to analyze, propose and make optimal decisions, predict ways to manage the region based on creativity, scientific research and generalization of ideas, explanation of processes, phenomena, and prediction of their development. All this is only a part of the task of specialists in the field of human geography and regional development, which requires urgent changes in the structure of training in this field. The outlined tasks assigned to educational programs should form the basis of competencies of graduates, comprising the intellectual potential of Ukraine (Nemets, 2012, Niemets 2018, 2019).

Ukraine's geography education is expanding international cooperation through academic mobility programs, research collaborations, and sustainability projects. V. N. Karazin Kharkiv National University plays a key role, ranking among Ukraine's top universities in the QS World University Rankings 2024. The NATO Advanced Research Workshop (2023) on military brownfields redevelopment and cooperation with European universities under Erasmus+, and the publications in Special Springer Issues, highlight efforts to integrate Ukrainian geography education into the global academic landscape.

By modernizing educational programs, fostering international research partnerships, and implementing sustainability-focused policies, Ukraine's geogra-

phy education system aims to positioning itself as a leader in sustainable regional development and environmental studies on a global scale.

Discussion

Analyzing the historical evolution of sustainable development shows that changing "human qualities" is only possible through education – a concept emphasized in Aurelio Peccei's works (Club of Rome, 2021). ESD plays a crucial role at all levels, from preschool to lifelong learning, requiring a well-coordinated approach across stages. Since the mid-20th century, ESD has evolved through phases of general, environmental, and sustainability education, responding to societal needs. However, these efforts have largely remained human-centered, failing to foster a true biocentric, nature-centric, and eco-centric mindset. Without shifting from anthropocentric views, humanity continues to exploit the environment without ensuring the biosphere's self-regulation and renewal. ESD must become a global, standardized approach to achieving sustainability and preserving the planet for future generations. Despite increased attention to ESD since the late 20th century, challenges remain in its effective implementation. Geography should serve as the foundation of ESD, as it integrates knowledge of nature, society, and their interactions. To advance ESD, further interdisciplinary research is needed to shape the collective mindset of a modern global society and address the growing anthropogenic challenges. Key priorities include:

• Developing a standardized, interdisciplinary ESD framework;

• Designing a comprehensive ESD model that integrates global best practices, specialized knowledge, pedagogical approaches, and learning methods across all educational stages;

• Ensuring the gradual accumulation of ESD competencies and practical skills at all levels (preschool, secondary, higher education, formal and non-formal learning), reinforcing lifelong education and sustainability principles.

By refining ESD standards and models, is is possible to equip future generations with the necessary mindset and skills to live sustainably and safeguard the biosphere.

Conclusions

Education is a vital tool for achieving the SDGs and is itself one of the SDGs. Global experience shows that higher education institutions play a crucial role in training specialists based on sustainability principles. ESD takes various forms, with diverse approaches to core SD competencies, yet its implementation depends on multiple factors. Transformational learning fosters critical thinking, changes social and individual behavior, and cultivates a generation aware of its role in achieving sustainability and taking responsibility for change.

Content analysis of ESD studies indicates a lack of a unified approach to implementation across educational levels. Further research is needed to develop effective, adaptable models that integrate SD competencies into all levels of education, all forms and institutions. The success of ESD depends on national education strategies and the incorporation of SD principles into curricula, research, and policy-making.

Higher education plays a pivotal role in fostering SD competencies by training professionals for sustainable societal development. An interdisciplinary approach-engaging public figures, policymakers, businesses, and researchers-enhances understanding and practical application of SD principles. Stronger collaboration between universities, research institutions, industries, and authorities is essential for shaping innovative behavior and critical thinking. This integration not only improves theoretical knowledge but also develops practical skills necessary for real-world sustainability challenges.

In Ukraine, integrating the SD paradigm into educational programs and training of specialists at all levels of education remains a pressing issue. ESD implementation faces challenges, including curriculum changes and the need for a national strategy. Universities must play a key role in advancing SD, addressing challenges, and leveraging research and technological advancements. Strengthening partnerships between educational institutions, governments, businesses, and international organizations is critical for achieving SD goals. Current education reforms in Ukraine call for curriculum transformation, increased practical training, and alignment with labor market demands. This requires an interdisciplinary learning approach including three main components: formation of in-depth professional knowledge and development of scientific outlook; mastering universal skills of research and teaching work; and development of language competencies which is extremely relevant in a globalized world.

Geography, as an interdisciplinary and sustainability-focused science, offers significant potential for ESD. The school geography curriculum already incorporates key SD principles, but their full realization requires diverse teaching methods and teacher engagement. In Ukraine's higher education, geography should be recognized as a core discipline across all specialties, aligning with international ESD standards. Education, as the largest social system shaping public consciousness, must embed sustainability values beyond formal education to drive ethical and sociocultural progress. Ignoring sustainability in education risks perpetuating unresolved global, regional, and local issues. In Ukraine's higher geographical education, defining its role, improving curricula, and strengthening human-geographical education based on sustainability principles should be a research priority.

Acknowledgements

C.F. thanks the Portuguese funding by FCT-Foundation for Science and Technology, P.I., through the institutional scientific employment program-contract (CEECINST/00077/2021).

References

1. *Morar, C., Berman, L., Erdal, S., & Niemets, L. (Eds) (2024). Achieving Sustainability in Ukraine through Military Brownfields Redevelopment. NATOARW 2023. NATO Science for Peace and Security. Series C: Environmental Security (NAPSC). Dordrecht: Springer, 470. https://link.springer.com/book/10.1007/978-94-024-2278-8*
2. *Adams, S., Farrelly, T., Holland, J. (2021). Non-formal ESD: A Case Study of the "Children in the Wilderness" Eco-Club Programme in the Zambezi Region. J. Educ. Sustain. Dev. https://doi.org/10.1177/0973408220980871*
3. *Adomssent, M., Fischer, Godemannb, J., Herzigc, C., Ottea, I., Rieckmann, M., Timma, J. (2014). Emerging areas in research on higher ESD – management education, sustainable consumption and perspectives from Central and Eastern Europe. J. Clean. Prod. 62, 1-7. https://doi.org/10.1016/j.jclepro.2013.09.045*
4. *Aldawsari, R. A. (2018). The Escuela Nueva (The New School) in Colombia; An Innovative Educational Program in Developing Countries. Multy-knowl. Electron. Compr. J. Educ. Sci. Publ. 15. https://www.mecsj.com/uplode/images/photo/The_Escuela_Nueva.pdf*
5. *AUF. https://www.auf.org/ (accessed 13 January 2025)*
6. *Bednarz, R. S., Petersen, J. F., Bednarz, S. W. (2007).Geography and ESD in the United States: The Need for Educational Resources. Internationale Schulbuchforschung, 29 (2), Bildung für nachhaltige Entwicklung. ESD, Berghahn Books, 171-184.*
7. *Botkin, J. W., Elmandjra, M., Malitza, M. (1979). Nolimitstolearning. Bridging the Human Gap: The Reportto the Club of Rome. Oxford: PergamonPress, 159. https://doi.org/10.1016/C2009-0-09505-1*
8. *Cabinet of Ministers of Ukraine – Government Portal. https://www.kmu.gov.ua/en (accessed 29 October 2024)*
9. *Club of Rome (2021). Impact Hubs. https://www.clubofrome.org/ (accessed 10 May 2024)*
10. *Copernicus – The University Charter for Sustainable Development. Geneva, May 1994. https://www.iau-hesd.net/sites/default/files/documents/copernicus.pdf*
11. *Demirci, A. Gonzalez, R. de Miguel, Bednarz, S. (Eds). (2018). Geography Education for Global Understanding. Springer, International Perspectives on Geographical Education (IPGE), 252.*
12. *[Денисик, Г. І., Мезенцев, К. В., Антіпова, Є. А., & Кізюн, А. Г. (2020). Географія повсякдення: просторове різноманіття повсякденного життя. Вісник Харківського національного університету імені В. Н. Каразіна. Серія «Геологія. Географія. Екологія», (52), 130-138. https://doi.org/10.26565/2410-7360-2020-52-10] Denysyk, G., Mezentsev, K., Antipova, E., Kiziun, A. (2020). An everyday geography: spatial diversity of the everyday life. Visnyk of V. N. Karazin Kharkiv National University. Series Geology. Geography. Ecology, (52), 130-138 [in Ukrainian]. https://doi.org/10.26565/2410-7360-2020-52-10*
13. *Department of Human Geography and Regional Studies named after Kostiantyn Niemets. V. N. Karazin Kharkiv National University. http://soc-econom-region.univer.kharkov.ua (accessed 9 October 2024)*
14. *Draft Law of Ukraine On the Strategy for Sustainable Development of Ukraine until 2030 dated 07.08.2018 No. 9015 https://ips.ligazakon.net/document/JH6YF00A?an=650*
15. *Elias, V.V. (2003). Review of the most important international agreements in the field of ESD http://www.ecoaccord.org/edu/Obzor-Int.agreements.htm (accessed 15 December 2024)*
16. *European Commission (2019). Key Competences for Lifelong Learning. https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed 71a1/language-en*
17. *Evans, D., Janes-Bassett, V., Borrelli, P., Chenu, C., Ferreira, C.S.S., Griffiths, R., Kalantari, Z., Keesstra, S., Lal, R., Panagos, P., Robinson, D., Seifollahi-Aghmiuni, S., Smith, P., Steenhuis, T., Thomas, A., Visser, S. (2021). Sustainable futures over the next decade are rooted in soil science. Eur. J. Soil Sci.1-16. https://doi.org/10.1111/ejss.13145*
18. *Ferreira, S., Cabral, M. et al. (2014). Economic and environmental impacts of the recycling system in Portugal. J. Clean. Prod. 79, 219-230. https://doi.org/10.1016/j.jclepro.2014.05.026*
19. *Global understading. http://www.global-understanding.info/ (accessed 2 February 2025)*
20. *Gombert-Courvoisier, S., Sennes, V., Ribeyre, M. R., Ribeyre F. (2014). HigherEducation for Sustainable Consumption: case report on the Human Ecology Master'scourse (University of Bordeaux, France). J. Clean. Prod. 62, 82-88. https://doi.org/10.1016/j.jclepro.2013.05.032*
21. *HundrED Research. https://hundred.org/en/research (accessed 5 December 2024)*
22. *International Association of Universities. https://www.iau-aiu.net/ (accessed 19 January 2025)*
23. *International Geographical Union (2016). International Charter on Geographical Education. Commission on Geographical Education. https://www.igu-cge.org/wp-content/uploads/2019/03/IGU_2016_eng_ver25Feb2019.pdf*
24. *Ivan Franko National University of Lviv. https://lnu.edu.ua/en/ (accessed 8 June 2024)*
25. *Kalantari, Z., Ferreira, C.S.S., Pan, H., Pereira, P. (2023). Nature-based solutions to global environmental challenges. Science of The Total Environment. 880, 163227. https://doi.org/10.1016/j.scitotenv.2023.163227*
26. *Kamianets-Podilskyi Ivan Ohiienko National University. https://kpnu.edu.ua/ (accessed 8 June 2024)*
27. *Kherson State University. https://www.kspu.edu/ (accessed 8 June 2024)*
28. *Knowledge Platform. https://sustainabledevelopment.un.org/focussdgs.html (accessed 24 June 2024)*

29. Kostrikov, S., Niemets, L., Sehida, K., Niemets, K., Morar, C. (2018). Geoinformation Approach to Urban Geographic System Research (Case Studies of Kharkiv region). Visnyk of V. N. Karazin Kharkiv National University. Series Geology. Geography. Ecology. (49), 107-124. https://doi.org/10.26565/2410-7360-2018-49-09
30. Labodova, A., Lapchik, V., Kodymová, J., Turjak, J., Pivko, M. (2014). Sustainability teaching at VSB – Tehnical University of Ostrava. Journal of Cleaner Production. 62, 128-133. https://doi.org/10.1016/j.jclepro.2013.03.019
31. Laurie, R., Nonoyama-Tarumi, Y., Mckeown, R., Hopkins, C. (2016). Contributions of ESD (ESD) to Quality Education: A Synthesis of Research. J. Educ. Sustain. Dev. 10:2, 226–242. https://doi.org/10.1177/0973408216661442
32. [Закон України про освіту № 2145-VIII (2017). https://zakon.rada.gov.ua/laws/show/2145-19#Text] Law of Ukraine About Education # 2145-VIII (2017). [in Ukrainian]. https://zakon.rada.gov.ua/laws/show/2145-19#Text
33. [Закон України про вищу освіту № 1556-VII (2014). https://zakon.rada.gov.ua/laws/show/1556-18#Text] Law of Ukraine About Higher Education. # 1556-VII (2014). [in Ukrainian]. https://zakon.rada.gov.ua/laws/show/1556-18#Text
34. Lesya Ukrainka Volyn National University. https://vnu.edu.ua/en (accessed 10 June 2024)
35. Maude, A. (2017). Applying the concept of powerful knowledge to school Geography. The Power of Geographical Thinking, Springer, Cham, 27-40.
36. Maude, A. (2018). Geography and powerful knowledge: a contribution to the debate. Int. Res. Geog. Environ. Educ. 27 (2), 179–190. https://doi.org/10.1080/10382046.2017.1320899
37. Meadows, M. E. (2020). Geography ESD. Geogr. Sustain. 1 (1), 88-92. https://www.sciencedirect.com/science/article/pii/S2666683920300018
38. Mellalieu, P. J. (2008). Shifting frontiers, new priorities, creating pathways: elevating the case for tertiary ESD in New Zealand. Education for sustainability (EfS). https://www.researchgate.net/publication/228916224_Shifting_frontiers_new_priorities_creating_pathways_elevating_the_case_for_tertiary_education_for_sustainable_development_in_New_Zealand
39. Mezentsev, K. (2020). Ukraine in Transformation: From Soviet Republic to European Society. Int. J. Urban Reg. Res. 44 (5), 943-945. https://doi.org/10.1111/1468-2427.12959
40. Mezirow, J. & Associates (2000). Learning as Transformation: Critical Perspectives on a Theory in Progress. San Francisco: Jossey Bass, 371.
41. Mezirow, J. (1997). Transformative Learning: Theory to Practice. New Directions For Adult And Continuing Education. 74, 5-12. https://cmapsconverted.ihmc.us/rid=1MCY1CBS9-W00F4X-15W8/Transformative-Learning-Mezirow-1997.pdf
42. Ministry of Economic Developmentand Trade of Ukraine (2017). Sustainable Development Goals: Ukraine. National Baseline Report. https://www.ua.undp.org/content/ukraine/en/home/library/sustainable-development-report/sustainable-development-goals--2017-basseline-national-report.html (accessed 28 May 2024)
43. [Міністерство освіти і науки України (2021). Затверджені стандарти вищої освіти. https://mon.gov.ua/ua/osvita/visha-osvita/naukovo-metodichna-rada-ministerstva-osviti-i-nauki-ukrayini/zatverdzheni-standarti-vishoyi-osviti] Ministry of Education and Science of Ukraine (2021). The higher education standards Approved. [in Ukrainian]. https://mon.gov.ua/ua/osvita/visha-osvita/naukovo-metodichna-rada-ministerstva-osviti-i-nauki-ukrayini/zatverdzheni-standarti-vishoyi-osviti
44. [Міністерство освіти і науки України (2024). Стандарт вищої освіти зі спеціальності 106 Географія для третього (освітньо-наукового) рівня вищої освіти https://mon.gov.ua/static-objects/mon/sites/1/vishcha-osvita/zatverdzeni%20standarty/2024/13.08.2024/106.Heohrafiya-doktor.filosofiyi-1128.vid.13.08.2024.pdf] Ministry of Education and Science of Ukraine (2024). The higher education standards Approved: 106 Geography PhD [in Ukrainian]. https://mon.gov.ua/static-objects/mon/sites/1/vishcha-osvita/zatverdzeni%20standarty/2024/13.08.2024/106.Heohrafiya-doktor.filosofiyi-1128.vid.13.08.2024.pdf
45. Morar, C., Lukić, T., Basarin, B., Valjarević, A., Vujičić, M., Niemets, L., Telebienieva, I., Nagy, G. (2021). Shaping Sustainable Urban Environments by addressing the Hydro-Meteorological Factors in the Landslide Occurrence: Ciuperca Hill (Oradea, Romania). Int. J. Environ. Res. Public Health. 18(9), 5022. https://doi.org/10.3390/ijerph18095022
46. Morrell, A., O'Connor, M. (2002). Introduction. In O'Sullivan, E., Morrell, A. & O'Connor, M. (Eds). Expanding the Boundaries of Transformative Learning: essays on theory and praxis. New York: Palgrave Macmillan, pp.xv-xx.
47. Mukachevo State University. https://msu.edu.ua/ (accessed 8 June 2024)
48. [Нємець Л.М. (2016). Підземні води як чинник стійкого розвитку регіону. Вісник Харківського національного університету імені В. Н. Каразіна. Серія «Геологія. Географія. Екологія», (45) 62-66. http://journals.uran.ua/geoeco/article/view/96098/91496] Nemets, L. M. (2016). Underground water as factor of sustainable regional development. Visnyk of V. N. Karazin Kharkiv National University. Series Geology. Geography. Ecology. (45), 62-66 [in Ukrainian]. http://journals.uran.ua/geoeco/article/view/96098/91496
49. [Нємець Л. М., Сегіда К. Ю., Гусєва Н. В., Ключко Л. В. (2016). Місце суспільної географії у підготовці фахівців зі спеціальності «Науки про Землю». Матеріали Міжнародної науково-практичної конференції «Від географії до географічного країнознавства: еволюція освітньо-наукових ідей та пошуків (до 140-річчя географії у Чернівецькому національному університеті імені Юрія Федьковича)», м. Чернівці, 111–113] Nemets, L. M., Sehida, K. Y., Husieva, N. V., Kliuchko, L. V. (2016). The place of human geography in the training specialists in the specialty "Earth Sciences". Proceedings of the International Scientific and Practical Conference

"From Geography to Geographical Country Studies: Evolution of Educational and Scientific Ideas and Findings (to the 140th Anniversary of Geography at Yuri Fedkovych National University of Chernivtsi)", Chernivtsi, 111-113 [in Ukrainian].

50. [Нємець, Л. (2012). Сучасна соціальна географія: аналіз стану, проблеми та перспективи. Часопис соціально-економічної географії, 13(2), 14-20. https://periodicals.karazin.ua/socecongeo/article/view/6585] Nemets, L. (2012). Modern social geography: analysis of the situation, problems and prospects. Human Geogr. J. 13(2), 14-20. [in Ukrainian]. https://periodicals.karazin.ua/socecongeo/article/view/6585 [in Ukrainian].
51. [Нємець Л. М. (2018). Суспільна географія: сучасні виклики, реалії, перспективи. Матеріали міжнародної науково-практичної конференції «Регіон – 2018: стратегія оптимального розвитку», м. Харків, 37–42] Niemets L.M. (2018). Human geography: modern challenges, realities, prospects. Proceedings of the international scientific-practical conference Region 2018: strategy of optimal development, Kharkiv, 37-42 [in Ukrainian].
52. Niemets, L., Sehida, K., Kliuchko, L., Telebienieva, I., Niemets, K. (2019). Some issues of the methodological status of human geography in the context of interdisciplinary research. Proceedings of the international scientific-practical conference "Region 2019: strategy of optimal development", Kharkiv, 17-22.
53. Niemets, L., Sehida, K., Kobylin, P., Tahsin Şahin, M., Bartosh, O., Telebienieva, I., Kravchenko, K., & Kliuchko, L. (2023). Integrative role of human geography in solving global problems of modernity. Visnyk of V. N. Karazin Kharkiv National University. Series Geology. Geography. Ecology. (58), 171-187. https://doi.org/10.26565/2410-7360-2023-58-14
54. Nizhyn Mykola Gogol State University. https://en.ndu.edu.ua/ (accessed 9 June 2024)
55. Nolet, V. (2015). Educating for Sustainability: Principles and Practices for Teachers (1st ed.). Routledge. https://doi.org/10.4324/9781315867052.
56. Odessa I.I. Mechnikov National University. http://onu.edu.ua/en/ (accessed 8 June 2024)
57. Office for Climate Education. https://www.oce.global/en (accessed 16 June 2024)
58. Oles Honchar Dnipro National University. http://www.dnu.dp.ua/en (accessed 9 June 2024)
59. Poltava V.G. Korolenko National Pedagogical University. https://pnpu.edu.ua/ (accessed 8 June 2024)
60. Potocki, K., Raska, P., Ferreira, C.S.S., Bezak, N. (2023). Translating Nature-Based Solutions for Water Resources Management to Higher Educational Programs in Three European Countries. Land. 12 (11), 2050. https://doi.org/10.3390/land12112050
61. QS World University Rankings https://www.topuniversities.com/universities/v-n-karazin-kharkiv-national-university#wurs (accessed 27 June 2024)
62. Reggio Emilia Australia Information Exchange. https://reggioaustralia.org.au/ (accessed 19 June 2024)
63. Reinfried, S. Schleicher, Y. Rempfler A. (2007). Geographical Views on ESD. Proceedings of the Lucerne-Symposium, Switzerland, July 29-31, 2007. Geographiedidaktische Forschungen, 42, 243-250.
64. [Постанова Кабінету Міністрів України «Про затвердження переліку галузей знань і спеціальностей, за якими здійснюється підготовка здобувачів вищої освіти» (2015). № 266. https://zakon.rada.gov.ua/laws/show/ru/266-2015-%D0%BF?lang=uk#Text]
Resolution of the Cabinet of Ministers of Ukraine: On approval of the list of branches of knowledge and specialties in which the higher education students are trained (2015). # 266. [in Ukrainian]. https://zakon.rada.gov.ua/laws/show/ru/266-2015-%D0%BF?lang=uk#Text
65. [Постанова Кабінету Міністрів України «Про затвердження переліку галузей знань і спеціальностей, за якими здійснюється підготовка здобувачів вищої освіти» № 266 від 2015 року (в редакції Постанови Кабінету Міністрів України від 30.08.2024 No. 1021. https://zakon.rada.gov.ua/laws/show/266-2015-%D0%BF#n11]
Resolution of the Cabinet of Ministers of Ukraine: On approval of the list of branches of knowledge and specialties in which the higher education students are trained. № 266, 2024 as amended by the Resolution of the Cabinet of Ministers of Ukraine dated August 30, 2024, No. 1021. [in Ukrainian]. https://zakon.rada.gov.ua/laws/show/266-2015-%D0%BF#n11
66. Rudenko L.H, Zaiachuk M.D., Lisovskyi S.A., Maruniak Eu.O., Munich N.V., Peresadko V.A., Ponomarenko O.M. (2022). Russia's Military Aggression in Ukraine and its Consequences for Geographic Education and Science. Ukrainian Geogr. J. 4 (120), 4-12 https://doi.org/10.15407/ugz2022.04.004
67. Sammalisto, K.,Brorson, T. (2008). Trai11ing and communication in the implementation of environmental management systems (ISO 14001): a case study at the University of Gavle, Sweden. J. Clean. Prod. 16 (3), 299-309. https://doi.org/10.1016/j.jclepro.2006.07.029
68. Sprenger, S. & Nienaber, B. (2018). (Education for) Sustainable Development in Geography Education: review and outlook from a perspective of Germany. J. Geogr. High. Educ. 42:2, 157-173, https://doi.org/10.1080/03098265.2017.1379057
69. Statement by the Ministers of the Environment of the UNECE countries on ESD. The Environmental Process for Europe. Kyiv, 2003.
70. Sumy State Pedagogical University named after A.S. Makarenko. https://sspu.edu.ua (accessed 21 June 2024)
71. Sustainable development policies in Karazin University. https://karazin.ua/en/universitet/tsili-staloho-rozvytku/polityky-staloho-rozvytku/ (accessed 12 October 2024)
72. Taras Shevchenko National University of Kyiv. http://www.univ.kiev.ua/en/ (accessed 8 June 2024)
73. Ternopil Volodymyr Hnatiuk National Pedagogical University. https://tnpu.edu.ua/en/ (accessed 8 June 2024)
74. The Association of Commonwealth Universities. https: //www.acu (accessed 14 January 2025)
75. The single state electronic database on education. https://vstup.edbo.gov.ua/ (accessed 8 June 2024)

76. UNDP (2015). Sustainable Development Goals 2030. 23.
77. UNDP. Human Development Reports 1990-2015. http://hdr.undp.org/en/global-reports (accessed 3 June 2024)
78. [Стратегія ЄЕК ООН для освіти в інтересах сталого розвитку (2005). Одеса, Екологія, 44]. UNECE Strategy for ESD (2005). Odessa, Ecology, 44 [in Ukrainian].
79. UNESCO Almaty, 2018. Regional Synthesis Review on ESD.
80. UNESCO and France enhance Climate Change Education worldwide (2021). https://en.unesco.org/news/unesco-and-france-enhance-climate-change-education-worldwide (accessed 30 June 2024)
81. UNESCO and UNEP (1977). Tbilisi Declaration. Intergovernmental Conference on Environmental Education. Tbilisi, USSR 74 - 26 October 1977. https://www.gdrc.org/uem/ee/tbilisi.html
82. UNESCO (1975). The Belgrade Charter: a framework for environmental education, 1975. International Workshop on Environmental Education. https://www.eusteps.eu/wp-content/uploads/2020/12/Belgrade-Charter.pdf
83. UNESCO (2012). Shaping the Education of Tomorrow. 2012 Report on the UN Decade of ESD, Abridged. 12. https://sustainabledevelopment.un.org/content/documents/919unesco1.pdf (accessed 28 June 2024)
84. UNESCO (2015). International Standard Classification Of Education. Fields of education and training 2013 (ISCED-F 2013) – Detailed field descriptions. http://dx.doi.org/10.15220/978-92-9189-179-5-en
85. UNESCO (2016). Education 2030. Incheon Declaration and Framework for Action: towards inclusive and equitable quality education and lifelong learning for all. http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf
86. UNESCO (2021). Learn for Our Planet: A Global Review of How Environmental Issues are Integrated in Education. United Nations Educational, Scientific, and Cultural Organisation, Paris, France. https://unesdoc.unesco.org/ark:/48223/pf0000377362
87. UNESCO. ESD. https://en.unesco.org/themes/education-sustainable-development (accessed 15 January 2025)
88. UNESCO. Institute for Statistics. http://tcg.uis.unesco.org/wp-content/uploads/sites/4/2020/09/Metadata-4 (accessed 21 January 2025)
89. UNESCO-EPD (1997). Declaration of Thessaloniki. International Conference Environment and Society: Education and Public Awareness for Sustainability. Thessaloniki, Greece 8-12 December. https://unesdoc.unesco.org/ark:/48223/pf0000117772
90. United Nations Ukraine. The Sustainable Development Goals in Ukraine. https://ukraine.un.org/en/sdgs (accessed 28 June 2024)
91. United Nations (1972). Report of The United Nations Conference on The Human Environment, Stockholm. http://www.un-documents.net/aconf48-14r1.pdf
92. United Nations (1987). Report of the World Commission on Environment and Development: Our Common Future. https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf
93. United Nations (1992a). Resolution adopted by the General Assembly. Documents Gathering a body of global agreements. General Assembly. http://www.un-documents.net/a47r191.htm (accessed 20 April 2021)
94. United Nations (1992b). Agenda 21. United Nations Conference on Environment & Development, Rio de Janerio. https://www.un.org/en/conferences/environment/rio1992
95. United Nations (2015). The Millennium Development Goals Report 2015, NewYork. https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf
96. United Nations, Economic and Social Council (2019). Long-term strategy for the Convention until 2030. ECE/CP.TEIA/38/Add.1 https://documents.un.org/doc/undoc/gen/g19/069/95/pdf/g1906995.pdf
97. United Nations. Department of Economic and Social Affairs. Sustainable Development. The 17 Goals. https://sdgs.un.org/ (accessed 3 September 2024)
98. United Nations. High-level Political Forum on Sustainable Development. OHCHR and the 2030 Agenda for Sustainable Development. https://www.ohchr.org/en/sdgs/high-level-political-forum-sustainable-development (accessed 12 Desember 2024)
99. United Nations. Open Working Group proposal for Sustainable Development Goals. Sustainable Development. https://sustainabledevelopment.un.org/content/documents/1579SDGs%20Proposal.pdf
100. United Nations. Sustainable Development Goals. https://www.ua.undp.org/content/ukraine/en/home/sustainable-development-goals.html (accessed 27 September 2024)
101. Uzhhorod National University. https://www.uzhnu.edu.ua/en/ (accessed 8 June 2024)
102. V.N. Karazin Kharkiv National University. https://www.univer.kharkov.ua/en (accessed 9 June 2024)
103. Vasyl Stefanyk Precarpathian National University. https://pnu.edu.ua/en/ (accessed 8 June 2024)
104. Vincent, S., Mulkey, S. (2015). Transforming US the higher education to support sustainability science for a resilient future: the influence of institutional administrative organization. Environ. Dev. Sustain. 17 (2), 341–363
105. Yuriy Fedkovych Chernivtsi National University. http://en.chnu.edu.ua/ (accessed 8 June 2024)

Authors Contribution: All authors have contributed equally to this work
Conflict of Interest: The authors declare no conflict of interest

Інтеграція концепції сталого розвитку в географічну освіту: від глобальних перспектив до досвіду України

Катерина Сегіда [1]
д. геогр. н., професор, завідувач кафедри соціально-економічної географії і регіонознавства імені Костянтина Нємця,
[1] Харківський національний університет імені В. Н. Каразіна, Харків, Україна;
Карла Софія Сантос Феррейра [2]
д. філософії з екологічних наук та інженерії, Інститут прикладних досліджень, Дослідницький центр природних ресурсів, навколишнього середовища та суспільства (CERNAS),
[2] Політехнічний інститут Коїмбри, Бенканта, Коїмбра, Португалія;
Наталія Гусєва [1]
к. геогр. н., доцент кафедри соціально-економічної географії і регіонознавства імені Костянтина Нємця;
Катерина Кравченко [1]
к. геогр. н., доцент кафедри соціально-економічної географії і регіонознавства імені Костянтина Нємця;
Людмила Ключко [1]
к. геогр. н., доцент кафедри соціально-економічної географії і регіонознавства імені Костянтина Нємця;
Ганна Кучерява [3]
к. геогр. н., декан факультету туризму, бізнесу і психології,
[3] Київський національний лінгвістичний університет, Київ, Україна;
Ольга Суптело [1]
д. філософії з наук про Землю, доцент кафедри соціально-економічної географії і регіонознавства імені Костянтина Нємця;
Євгенія Телебєнєва [1]
к. геогр. н., доцент кафедри соціально-економічної географії і регіонознавства імені Костянтина Нємця

Сьогодні суспільство стикається з низкою надзвичайно гострих проблем, які не вдається розв'язати навіть у розвиненому світі. Особливо гостро постають проблеми у взаємодії системи «суспільство – економіка – природа». Глобальні трансформації, що відбуваються в суспільстві та пов'язані з подоланням системних криз і суперечностей, а також перехід людства до нового шляху цивілізаційного розвитку, потребують еволюції політики сталого розвитку та стратегій освіти. Географія має стати ядром, основою освітнього стандарту освіти в інтересах сталого розвитку, оскільки вона за своєю суттю є міждисциплінарною і охоплює знання, концепції та компетенції щодо природи й суспільства. Враховуючи сучасні тенденції реформування системи освіти в Україні, зокрема вищої освіти, невизначене місце географії в системі знань вимагає пошуку шляхів трансформації освітніх програм і навчальних планів із посиленням практичної підготовки та акцентом на формуванні компетенцій, затребуваних на ринку праці, що потребує застосування комплексного міждисциплінарного підходу. Мета статті – визначити ключові особливості освіти в інтересах сталого розвитку у світі та, зокрема, в Україні, шляхом аналізу літератури (наприклад, документів глобальних форумів і конференцій, освітніх програм та нормативних актів), що стосуються та обґрунтовують питання освіти для сталого розвитку. У роботі висвітлено міжнародні практики в цій галузі, досліджено потенціал географічної освіти для сталого розвитку та окреслено роль географічної освіти на всіх рівнях освітньої системи з перспективи сталого розвитку. Фокус на Україні є особливо актуальним через трансформацію її освітньої системи та рух у напрямку європейської інтеграції. Розглядається освіта для сталого розвитку в Україні через аналіз матеріалів глобальних форумів та найкращих світових практик. Визначено потенціал географічної освіти у просуванні сталого розвитку та оцінено впровадження освітніх програм в Україні. Підкреслюється важливість суспільної географії, методологія якої відповідає потребам освіти для сталого розвитку. Освіта як найбільша соціальна система, що формує суспільну свідомість, повинна впроваджувати цінності сталості за межами формального навчання для стимулювання етичного та соціокультурного прогресу. У вищій освіті України географія має бути визнана базовою дисципліною для всіх спеціальностей, що відповідає міжнародним стандартам освіти для сталого розвитку. Ігнорування принципів сталості в освіті несе ризик закріплення невирішених глобальних, регіональних та локальних проблем.

Ключові слова*: освіта в інтересах сталого розвитку, цілі та завдання сталого розвитку, географічна освіта, суспільна географія, освітні компетенції для сталого розвитку, система освіти, освітні програми, Україна.*

Внесок авторів: всі автори зробили рівний внесок у цю роботу
Конфлікт інтересів: автори повідомляють про відсутність конфлікту інтересів

Надійшла 20 квітня 2025 р.
Прийнята 17 жовтня 2025 р.