

## SUSTAINABLE DEVELOPMENT THROUGH QUALITY EDUCATION AND MODERN TECHNOLOGIES

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*The article focuses on the conceptual foundations of sustainable development and the principles of its implementation in Ukraine. It represents an analytical contribution by the authors, taking into account their professional, academic, and pedagogical experience. Emphasis is placed on the directions for implementing the Sustainable Development Goals (SDGs) defined by the United Nations. Education is identified as a fundamental sector for shaping experience in balancing the social, economic, and environmental dimensions of civilizational progress. The significance of education quality for sustainable development is highlighted. Ukraine strives for a balanced approach to addressing economic challenges, preserving a favorable state of the environment and natural resource potential, and maintaining the mental and physical well-being of its population. An important objective is the preservation of the country's national cultural heritage: the individual as a bearer of culture and representative of a nation plays a key role in safeguarding national cultural identity as an integral part of the world's cultural legacy. The necessity of fulfilling Sustainable Development Goal 3 – "Good Health and Well-being" – underlines the need to deepen citizens' understanding of the importance of a healthy lifestyle. By enhancing quality of life, improving productivity, and strengthening social resilience, health-preserving educational technologies contribute to building sustainable societies. The generation entrusted with the mission of implementing sustainable development tasks must be competent in critical thinking. For university students, well-developed critical thinking skills are prerequisites for academic success and lifelong learning; they support structured decision-making based on complex scenarios and objective evaluation of interdisciplinary information. The experience of Australia demonstrates the relevance of international integration among scholars committed to the successful implementation of sustainable development principles. Sustainability is embedded in course content and in teaching methods, infrastructure, and institutional strategies. This is achieved through national policies, the autonomy of educational institutions, the involvement of professional communities, and partnerships with industry.*

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## **Introduction**

Sustainable development is a fundamental priority of the modern world, aimed at balancing economic growth, social well-being, and environmental protection. It contributes to addressing global challenges such as climate change, health crises, and social inequality, emphasizing the need for long-term solutions. Education plays a crucial role in achieving the goals of sustainable development. Through education, individuals acquire the knowledge, skills, and values necessary for leading a healthy lifestyle, preserving the environment, maintaining economic and social balance, and safeguarding both national and global cultural heritage. The quality of education – particularly higher education – achieved through the implementation of innovative technologies, serves as a key instrument in promoting the well-being of the population, strengthening mental and physical health, fostering economic progress, preserving national and cultural identity, and supporting lifelong learning for various groups of learners.

## **Research Methods and Organization**

The article primarily employs scientific theoretical methods, including analysis, synthesis, generalization, comparison, and definitional analysis. These methods were applied to process information obtained from internet resources, scholarly articles, and monographs. The main sources for scientific analysis included documents of international organizations (the United Nations, UNESCO, and the European Commission) that outline strategies for sustainable development, as well as the Resolution of the Verkhovna Rada of Ukraine on the Sustainable Development Goals in Ukraine. Additionally, the article incorporates findings from a doctoral dissertation in the field of pedagogical comparative studies (with a focus on higher education in Australia) and materials from the international ERASMUS+ project under the Jean Monnet Module programme.

## **Results and Discussion**

*Conceptual understanding of sustainable development and principles of its implementation in Ukraine*

Sustainable development is a process of nation-building based on the alignment and harmonization of social, economic, and environmental components. It represents a systemic form of development that meets the needs of the present without depleting natural resources or harming the health and well-being of future generations. In other words, the concept of sustainable development is grounded in the balance of three pillars of civilizational progress: social, economic, and environmental. Sustainable development is a mode of managing our planet in a way that ensures the well-being of current generations without limiting the ability of future generations to meet their own needs. According to the United Nations Commission on Sustainable Development, its goal is to meet the needs of the present society without compromising the ability of future generations to satisfy their own needs. The theory of sustainable development serves as an alternative to the paradigm of economic growth, which often overlooks the ecological threats posed by an extensive development model.

To achieve the UN Sustainable Development Goals, enhance competitiveness, and promote growth within the European Union, the European Commission developed a strategic plan for the “Horizon Europe” programme (2025-2027). This plan outlines key strategic directions for funding EU research and innovation, including: the green transition, the digital transition, and a more resilient, competitive, inclusive, and democratic Europe. These priorities are aimed at addressing major global

challenges such as climate change, biodiversity loss, the digital shift, and population ageing. In line with this, nine new European partnerships have been launched: “Brain Health,” “Forests and Forestry for a Sustainable Future,” “Innovative Materials for the EU,” “Raw Materials for the Green and Digital Transition,” “Sustainable Cultural Heritage,” “Social Transformations and Resilience,” “Solar Photovoltaics,” “Textiles of the Future”, and “Virtual Worlds”.

Sustainable development is currently a priority for the European Union, which seeks to engage all interested stakeholders in this process while maintaining openness to international cooperation and, at the same time, protecting the Union’s strategic interests based on reciprocity and respect for fundamental values and principles. As a European country, Ukraine is actively involved in the implementation of the Sustainable Development Goals. Despite the ongoing war, Ukraine strives for a balanced approach to addressing economic challenges, preserving a favorable state of the environment and natural resource potential, and maintaining the mental and physical health of its population. These efforts are essential for meeting the needs of both current and future generations. Given these considerations, sustainable development in Ukraine is grounded in several key principles: ensuring the harmonious coexistence of humans and nature; upholding the right to equitable satisfaction of needs and equal opportunities for development for both present and future generations; the necessity of protecting and maintaining a healthy environment throughout the development of society; the state's responsibility for environmental degradation; building the country’s national capacity to ensure sustainable development; implementing measures to “green” economic activity; and eliminating the causes – rather than merely the consequences – of harmful anthropogenic impacts on environmental quality.

#### *Sustainable development through the quality of education*

Sustainable development of any country is impossible without education. Several concerns arise whether sustainability should relate educational setting. “The things that people do in science and education support economic activity, environmental quality, and governance, while religion and the arts lend meaning and purpose to a community’s way of life. Each of these four areas has some form of enlightenment, edification, or growth in knowledge and awareness as a mission or organizing purpose. As such, it is appropriate to accentuate the ways in which teachers, researchers, spiritual leaders, and artisans help us appreciate the essentials of sustainability” (Thompson & Norris, 2021).

The quality of education is a decisive condition for the sustainable development of society. This is confirmed by both the UN General Assembly resolution (2015) and the Resolution of the Verkhovna Rada of Ukraine (2019). Quality education is identified as one of the 17 Sustainable Development Goals for Ukraine by 2030: “Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities” (About the Sustainable Development, 2019). Researchers of these issues emphasize the importance of collaboration, individual well-being, and skill development strategies in transforming teacher education to achieve sustainable development (Grobler & Dittrich, 2024). Expanding this perspective, quality education is understood as one of the most powerful and proven drivers of sustainable development, applicable in both formal and non-formal educational contexts, and capable of generating numerous benefits for society as a whole (González García et al., 2020). Moreover, the use of educational technologies (EdTech) is increasingly encouraged as a means of enhancing the teaching and learning process and further promoting the achievement of sustainable development goals (Costa et al., 2023).

The importance of quality education for sustainable development was also emphasized in the “Europe 2020” strategy, which encompassed three interrelated priorities: smart growth – development of an economy based on knowledge and innovation; sustainable growth – promotion of a resource-efficient, environmentally friendly, and competitive economy; and inclusive growth—strengthening an economy with high employment that ensures social and territorial cohesion. All priorities are interconnected: higher education levels provide better opportunities in the labor market, while increased employment helps reduce poverty. Greater opportunities in research, innovation, and development across all economic sectors, as well as more efficient resource use, are directly linked to competitiveness and employment. Thanks to investments in environmentally safe technologies, the environment will improve, enabling effective climate change mitigation and increasing potential for entrepreneurship and employment.

The quality of education influences the recognition of the role of social sciences and humanities in fulfilling the mission of the Horizon Europe program (2025-2027). It ensures a human-centered approach both to breakthrough innovations and the implementation of innovative solutions, as well as to directing investments towards the green and digital transitions and building a more sustainable, competitive, democratic, and inclusive Europe.

#### *Promoting sustainable development through health-preserving educational technologies*

Education plays a crucial role in achieving the Sustainable Development Goals, particularly Goal 3 – “Good Health and Well-being” and Goal 4 – “Quality Education.” Through education, individuals acquire the knowledge, skills, and values necessary to lead healthy lives and contribute to sustainable societies. Health-preserving educational technologies, therefore, become essential tools in promoting well-being, resilience, and lifelong learning. “... In scientific discourse, human physical and mental health is analyzed as a global phenomenon that constitutes the subject of scholarly investigation.... Researchers are unanimous in their belief that human health is inextricably linked to lifestyle and its quality” (Plachynda et al., 2024). In this context, a key priority for higher education institutions is the integration of health-preserving educational technologies into the educational process in order to develop conscious, physically and mentally healthy professionals oriented toward driving effective societal change in line with the Global Goals for Sustainable Development.

Health-preserving educational technologies are built upon several key principles that align with the goals of sustainable development. These principles include the prevention of health risks, the promotion of physical activity, the support of psycho-emotional well-being, and the development of digital health literacy. Health-preserving educational technologies encompass a wide range of approaches aimed at promoting students' physical and mental well-being within educational settings. Key types of such technologies include the integration of physical activity into the learning environment, interactive digital resources for cultivating healthy habits, and social-emotional learning programs that strengthen students' emotional resilience and social competences. The implementation of these technologies directly supports the achievement of the Sustainable Development Goals, particularly by fostering a sustainable, health-conscious lifestyle among the younger generation. By enhancing quality of life, improving productivity, and strengthening social resilience, health-preserving educational technologies contribute to building sustainable societies (United Nations, 2015; UNESCO, 2023).

Researchers increasingly emphasize the integration of health-preserving technologies into educational institutions to promote sustainable development. Building on this, Smeaton presents the

FLOURISH module, an online course designed to improve university students' health and digital literacy. The module encourages learners to collect and analyze personal data related to wellness topics such as sleep, nutrition, and physical activity, thereby fostering self-awareness and healthy habits (Smeaton, 2023). Additionally, scholars have investigated digital health literacy among nursing students in China. The study found that higher digital health literacy positively correlates with healthier lifestyles and greater psychological resilience, indicating that enhancing digital health literacy can contribute to students' overall well-being (Liu et al., 2024).

Health-preserving educational technologies encompass a wide range of approaches aimed at promoting the physical and mental well-being of learners within educational institutions. Key types of such technologies include the integration of physical activity into the learning environment (e.g., short exercise breaks and active pauses), interactive digital resources for fostering healthy habits (such as health mobile apps and gamification platforms like MyFitnessPal, Fitbit, Nike Training Club), as well as social-emotional learning (SEL) programs that strengthen learners' emotional resilience and social competencies. Innovative solutions in this field involve the active use of EdTech tools to monitor and support health-related behaviors, such as wearable devices tracking physical activity or online platforms that raise awareness about mental health. Interdisciplinary approaches combining education, medicine, psychology, and information technology are increasingly recognized as important for developing comprehensive health preservation strategies. Thus, the integration of health-preserving educational technologies is a crucial component of building a sustainable future. By promoting physical activity, supporting mental health, and enhancing digital health literacy, educational institutions contribute significantly to the formation of resilient, socially responsible individuals. Ultimately, strengthening the health potential of young generations through education directly supports the achievement of the Sustainable Development Goals and fosters long-term societal well-being.

#### *Cultural heritage as a system of value orientations on sustainable development*

The human being is the subject of sustainable development, as it is precisely the individual who is capable of establishing a balance among the three factors of civilizational progress: social, economic, and environmental. Sustainable development encompasses the processes of survival and reproduction of the nation's gene pool, activation of the role of each individual in society, ensuring their rights and freedoms, preservation of the natural environment, creation of conditions for the restoration of the biosphere and its local ecosystems, orientation towards reducing the level of anthropogenic impact on nature, and harmonization of human development within nature. A person, an individual, is a bearer of a certain culture and a representative of a nation; in the context of the sustainable development concept, they act as a driving force for preserving national cultural heritage as a component of the world's cultural wealth. Culture is the aggregate of material and spiritual values created by humanity throughout its history; it is a historically acquired set of rules within a society for its preservation and harmonization. Therefore, national culture is equivalent to the preservation of the nation, the people, and, consequently, the state. Culture consistently contributes to the implementation of activities across each of the five most important directions in the field of sustainable development (people, planet, prosperity, peace, partnership). In turn, the economic, social, and environmental components of sustainable development create conditions for the preservation of cultural heritage and the development of creative abilities, while some sustainable development goals



related to education ensure the development of human potential and can be more effectively realized through culture (Kats, 2021).

UNESCO Conventions (1972, 2002, 2005) ensure the protection of the world cultural heritage, including its intangible components. At the same time, these documents provide for the protection and promotion of the diversity of forms of cultural expression. The principles of sustainable development permeate the content of these international documents and UNESCO's cultural programs. The implementation of their provisions contributes to a comprehensive and balanced approach to the management of cultural resources, the valuation of heritage, as well as its protection and administration.

Education promotes the formation of a system of cultural orientations and personal attitudes based on the awareness of the priority of universal human values (respect for human dignity, freedom, democracy, equality, the rule of law, respect for human rights, including minority rights) and the understanding of the significance of the cultural component in the contemporary development of the global community. Researchers pay attention to the evolution of the understanding of cultural heritage and ways of its preservation and popularization. The most vivid manifestations of individual social responsibility for the preservation of Ukraine's cultural heritage are presented in a historical retrospective; innovative approaches to activating cultural heritage through its integration into the sustainable development system are analyzed; the tourism potential of tangible and intangible cultural heritage sites is characterized (Verbytska et al., 2022).

Scholars have identified the main problems and negative trends in the field of cultural heritage protection and preservation: disregard for internationally recognized principles of modern development in cultural heritage protection and preservation; the critical condition of the historical and cultural environment of most historic settlements; destruction and irreversible loss of historically valuable buildings, historical and cultural landscapes, sites and territories; the absence of a system of electronic information resources on Ukraine's cultural heritage; and the lack of a clear policy for introducing the global community to Ukraine's national cultural and natural heritage, among others. These problems have become even more acute due to Russia's military aggression. Researchers have substantiated proposals for reforming the state policy strategy in the field of cultural heritage protection and preservation. The main proposals include integrating cultural heritage protection and preservation issues into the strategy for balanced (sustainable) development of both the country as a whole and its regions; organizing and conducting appropriate monitoring; and intensifying fundamental and applied scientific research in domestic science aimed at studying and theoretically comprehending the role of cultural heritage in the country's social development as a foundation and powerful resource for balanced (sustainable) development and one of the most important environment-forming factors (Polyvach, 2022).

#### *Development of critical thinking skills as a key to successful learning and lifelong development*

Quality education, as noted above, is identified as one of the 17 Sustainable Development Goals of Ukraine by 2030. To achieve this goal, competent education stakeholders are required. These stakeholders, in turn, must develop key competencies. Critical thinking skills are integral and permeate all key competencies. At the 2020 World Economic Forum in Davos, critical thinking was ranked among the top 10 skills needed for careers in 2025. Researchers recognize the importance of developing critical thinking skills among university students as a fundamental component of

academic success and lifelong learning (Dominello, 2022). Authors emphasize the role of educators in implementing strategies to foster critical thinking through active learning methods, highlighting the necessity of this skill for students' professional and academic achievements (Bellaera et al., 2021). Building on this perspective, Plummer et al. investigate the effectiveness of Decision-Based Learning (DBL) as a teaching strategy for developing critical thinking. Their research findings demonstrate that DBL, which requires learners to make structured decisions based on complex scenarios, significantly improves students' ability to evaluate information, anticipate consequences, and justify their reasoning. The authors argue that DBL promotes deeper cognitive engagement by simulating real decision-making processes, thereby encouraging students to apply critical thinking in authentic and relevant contexts. Notably, learners who participated in DBL activities exhibited greater confidence in their analytical skills and were more adept at transferring critical thinking strategies across various domains (Plummer et al., 2022).

The formation of critical thinking skills among domestic students, particularly those studying pedagogical specialties, should take into account European experience. These skills help individuals resist manipulation and enable informed decision-making (Baranovska et al., 2020). The imposition of martial law in Ukraine has underscored the urgent need for teachers capable of correcting cognitive distortions, critically analyzing information, and teaching children to think critically. The value of utilizing European research on critical thinking development lies in the fact that contemporary educators will engage with a new generation of students who will live in a united Europe grounded in shared value principles. However, current research indicates that only about 35% of Ukrainian schoolchildren and students possess critical thinking skills. Consequently, the State Standards of Higher Education define critical thinking as a key skill embedded within all competencies. The cultivation of critical thinking in students will contribute to their civic engagement and enhance efforts to combat disinformation and fake news – significant obstacles to democratic development faced by European countries on their path toward civil society. Extrapolating this experience to Ukraine will promote active participation of student youth in democratic life through free expression of opinions, making socially important decisions, and adherence to the principles of using relevant and comprehensive information. This process will also support the establishment of European citizenship and the fundamental values of the EU: respect for human dignity, human rights, freedom, and equality. A crucial foundation for organizing this educational activity with students is the participation of higher education institutions in EU projects, particularly Erasmus+. This initiative includes the development of a training course titled “European Studies in Critical Thinking Development.” Through this course, students will have the opportunity to clarify the definition of “critical thinking” and become acquainted with key ideas and pedagogical concepts from leading European scholars such as L. Wittgenstein, K. Popper, J. Habermas, P. Ricoeur, Jean Piaget, D. Eliot, U. Traverso, and G. Giroux, from countries including Austria, Germany, Great Britain, Italy, France, and Switzerland. Additionally, students will be introduced to European practices involving innovative technologies for developing critical thinking and will have the chance to evaluate their advantages over traditional methods.

*Towards sustainable development through the use of international standards and best practices*

Modern trends in globalization and the integration of higher education require national systems not only to adapt to new conditions but also to ensure high quality aligned with international

standards. The analysis of Australia's experience in shaping the quality of higher education for the implementation of the sustainable development concept has shown that the country is one of the global leaders in implementing educational innovations, particularly in the field of sustainability. The Australian higher education system is characterized by high flexibility, the integration of advanced technologies and teaching methods, and a constant emphasis on environmental, social, and economic sustainability. The country's strategic initiatives can serve as a valuable reference point for the modernization of higher education in Ukraine, contributing not only to the development of professional competencies but also to the formation of responsibility for the planet's future. One of the key aspects is the integration of sustainable development into curricula at all educational levels. In Australia, it has become common practice to provide students with the opportunity to study not only traditional disciplines but also courses related to environmental issues, sustainable resource management, and social innovation. This enables graduates to gain not only professional knowledge but also an understanding of the importance of sustainable development in the context of global challenges. For Ukraine, this is a vital lesson: the systematic implementation of sustainable development principles in educational programs will help shape a new generation of professionals capable of addressing complex environmental and social issues.

Modern trends in globalization and the integration of higher education require national systems not only to adapt to new conditions but also to ensure high quality aligned with international standards. Australia's higher education system is internationally recognized for its quality, innovation, and focus on interdisciplinarity and global collaboration. Sustainability is embedded in course content and in teaching methods, infrastructure, and institutional strategies. This is achieved through national policies, the autonomy of educational institutions, the involvement of professional communities, and partnerships with industry. Innovative teaching methods – such as project-based learning, case studies, and simulations — are widely used to equip students with the competencies needed to address real-world sustainability issues. For Ukraine, which is currently undergoing comprehensive education reform, the Australian experience is highly relevant. Ukraine faces the need to align its education system with the demands of the labor market, European integration, and sustainable societal development.

Australia's experience can serve as a valuable model for updating curricula, teaching strategies, and quality assurance mechanisms in Ukrainian higher education. The Australian system is regulated by national bodies such as the Tertiary Education Quality and Standards Agency (TEQSA, 2023) and the Australian Research Council (ARC). Both public and private universities offer a wide range of programs at all levels, focusing on research, innovation, and inclusiveness. Sustainability is a cross-cutting theme integrated into educational practices and supported by government initiatives aimed at embedding environmental and social goals across the sector. One of the key aspects of Australia's success is the interdisciplinary nature of sustainability education, allowing students to understand the interconnection of global challenges and their professional responsibilities. Teaching methods emphasize practical, problem-solving approaches that simulate real-world conditions and promote teamwork, critical thinking, and systems thinking.

Specialized institutions play an important role in ensuring the quality of higher education and integrating sustainability principles in Australia. In particular, the Australian Learning and Teaching Council (ALTC) and the Office for Learning and Teaching (OLT) have initiated and supported numerous projects aimed at enhancing teaching and learning with a focus on ESD (Education for Sustainable Development). These projects have contributed to the development of innovative



teaching approaches that incorporate environmental and social responsibility. In addition, the Tertiary Education Quality and Standards Agency (TEQSA) plays a key role in quality assurance in higher education, including overseeing compliance with the Australian Qualifications Framework (AQF) – the national qualifications framework that defines learning standards, including sustainability competencies.

An important tool for encouraging universities to pursue sustainable development is participation in the Green Gown Awards, which recognize leading higher education institutions for their achievements in environmental sustainability and innovative practices. This approach demonstrates that sustainability in education is not only declared but also promoted through systematic recognition and national-level support. Despite Australia's numerous achievements, implementing its experience in Ukraine requires a comprehensive approach and adaptation to local conditions. One of the main issues is the insufficient integration of the sustainable development concept into educational standards and university programs in Ukraine. However, to successfully adapt Australia's experience, it is essential to consider the specific features of the Ukrainian higher education system, particularly its resource and infrastructure limitations. The support of government initiatives that promote sustainable management and environmental responsibility in educational institutions is crucial.

One promising direction for Ukraine is the introduction of project-based learning and case study methods into university curricula, which are actively used in Australia. These methods allow students to develop practical skills for solving real-world sustainable development problems, as well as enhance their ability to work in interdisciplinary teams. The case study method helps students immerse themselves in real situations and make decisions that take into account economic, environmental, and social factors, which are essential for sustainability. The integration of interdisciplinary knowledge and the development of systems thinking skills are important steps in preparing specialists capable of working effectively in a changing world. Programs that incorporate the study of sustainable development principles within different professional contexts can significantly improve the quality of education in Ukraine. Sustainable development is not only an environmental issue but also a socio-economic one, which requires professionals to be able to consider global challenges and strategies for addressing them within their field of expertise.

Ukraine has considerable potential to adopt these practices, but this requires systemic modernization. One priority is curriculum reform to include sustainability-related courses and modules across disciplines. Ukrainian universities also need to adopt participatory teaching methods – such as project-based learning – which are effective in building practical skills and encouraging active engagement with sustainability issues (Kovalchuk, 2022). Australia's integration of sustainability into education – from national strategy to classroom practice – offers a roadmap for Ukraine. Adapting similar approaches can enhance the relevance and quality of Ukrainian higher education, preparing graduates who are not only professionally competent but also globally responsible. Adapting Australia's experience in the context of Ukrainian higher education also involves the creation of specialized programs in sustainable development management for future leaders and entrepreneurs. Ukraine has significant potential for the development of such programs, which should take into account the specifics of the national economy and social needs. Cooperation between higher education institutions, government agencies, and businesses is essential for developing universal sustainability standards that meet both international and local requirements. To fully implement the sustainable development concept in Ukrainian higher education, several key

stages must be addressed. First, existing curricula must be adapted to sustainability standards, including new disciplines and courses. Second, the infrastructure of universities should be developed to support environmentally friendly technologies and implement sustainable management practices at the institutional level. Third, educators must be trained and prepared to effectively convey knowledge about sustainable development to future generations of students.

Thus, adapting the Australian experience in Ukraine is both a realistic and necessary step in the process of modernizing higher education. Integrating the sustainable development concept into educational programs will help prepare a new generation of professionals capable of addressing pressing social and environmental issues in line with contemporary demands.

### **Conclusions**

Thus, the article analyzes the impact of education through the use of new technologies on the success of implementing sustainable development goals. The authors paid attention to the analysis of documents of international organizations that are important for understanding the concept of sustainable development. It is proved that the quality of education is a key goal of sustainable development, it determines the success of academic activity and future professional activity throughout life. Attention is paid to the situation in Ukraine with sustainable development, problems are identified and prospects for its improvement in economic, social and environmental aspects are determined. There are many sustainable development goals, each of which corresponds to a strategy that can be implemented through the actualization of a certain technology. The authors of the article are competent in the humanitarian, comparative pedagogical, technological, biological spheres of activity. They propose to use technologies to improve the quality of education and, in general, to implement the goal of sustainable development; to ensure a healthy lifestyle for the population, to develop critical thinking skills, a value-based attitude towards the national cultural heritage, which is a component of the world's cultural heritage. The authors also consider it advisable to implement the positive experience of foreign countries in implementing sustainable development. This is primarily about countries that have a high innovation index. An example of such a country is Australia.

### **Conflict of interest**

The authors state no conflict of interest.

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