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## CONCEPTUAL MODEL OF THE UNIVERSITY SUSTAINABLE DEVELOPMENT

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*The purpose of the article is to conduct a comparative analysis of the sustainable development of some of the world leading universities in order to identify the best practices and adapt them to the Ukrainian context. The growing popularity of the sustainable development concept in the world practice stipulates the necessity to study the possibilities of its application in higher education in Ukraine. Nowadays, higher education institutions are not just a place for obtaining knowledge and competencies, they are the centres for accumulating the country intellectual capital; they are the research and training hubs; they are the agents of sustainable changes in society. The results of the analysis of the best practices of sustainable development in the world leading universities are presented in the article. The authors selected higher education institutions for analysis based on The Times Higher Education Impact Rankings. The top-50 leaders of this rating in 2022 were taken for analysis, they were grouped according to their geographical location. The main method of the study is comparative analysis. The study demonstrated that sustainable development, through achieving the goals of Sustainable Development is ensured by: academic component (Bachelor's and Master's programmes on sustainability), research component (research projects aimed at solving environmental, social, economic problems related to ensuring sustainable development), educational component (public lectures, conferences, events, workshops on familiarizing the public with the concept of Sustainable Development), economic component (creation of "green" campuses) and social component (support for students from socially vulnerable segments of the population, support of refugees, people with certain types of disabilities, the elderly, the female and providing humanitarian assistance to victims of natural disasters or wars, etc.). The article offers the authors' conceptual model of sustainable university development that consists of the following blocks: sustainable teaching, sustainable research, sustainable campus and sustainable partnership. In conclusion, the authors of the article introduced an assumption*



*about the possibility of applying the authors' model at the stage of post-war restoration of higher educational institutions in Ukraine.*

*Key words: sustainable development, higher education institution, Sustainable Development Goal, sustainable development concept, environmental, social and economic components of sustainable development.*

*Метою статті є проведення компаративного аналізу сталого розвитку деяких провідних університетів світу задля виявлення кращих практик та їх адаптації до українського контексту. Зростаюча популярність Концепції сталого розвитку у світі актуалізує дослідження можливостей її застосування щодо вищої освіти. Сучасні заклади вищої освіти – це не просто місце здобуття знань і компетенцій, це – центри акумуляції інтелектуального капіталу країни; це – дослідницькі та навчальні хаби; це – агенти сталих змін у суспільстві. У статті представлено результати аналізу кращих практик сталого розвитку провідних університетів світу. Вибір закладів вищої освіти для аналізу авторами здійснено на основі Times Higher Education Impact Rankings. До аналізу було взято top-50 лідерів цього рейтингу у 2022 р., а також проведено їх групування за географічною ознакою. Головний метод проведеного дослідження – компаративний аналіз. Дослідження показало, що забезпечення сталого розвитку, досягнення Цілей сталого розвитку реалізується через: освітню (бакалаврські і магістерські програми зі сталості), наукову (дослідницькі проекти, націлені на вирішення проблем екологічного, соціального, економічного характеру, пов'язаних із забезпеченням сталого розвитку), просвітницьку (публічні лекції, конференції, івенти, воркшопи з ознайомлення громадськості з Концепцією сталого розвитку), господарську (створення «зелених» кампусів) і соціальну (підтримка студентів із соціально вразливих верств населення, допомога біженцям, особам із певними видами хвороб, людям похилого віку, жінкам і дівчатам, надання гуманітарної допомоги постраждалим внаслідок стихійних лих чи війн тощо) діяльність. У статті запропоновано авторську концептуальну модель сталого розвитку університету, що складається із таких блоків: стале викладання, сталі дослідження, сталий кампус і стале партнерство. У висновку авторами статті висуното припущення щодо можливості застосування авторської моделі на етапі повоєнного відновлення закладів вищої освіти України.*

*Ключові слова: сталий розвиток, заклад вищої освіти, Ціль сталого розвитку, концепція сталого розвитку, екологічна, соціальна та економічна компоненти сталого розвитку.*

## **Introduction**

Sustainable development is one of the most topical concepts of our time. Established corporations, small businesses, NGOs, universities, and governments of leading countries of the world strive to adhere to the postulates of this concept. Functioning on the basis of sustainability creates additional competitive advantages, positively impacts the reputation and recognition (perception) of the organization in the society.

A number of initiatives of various organizations are aimed at achieving the 17 Sustainable Development Goals (SDGs). Conventionally, these goals can be grouped



according to the three main components of sustainable development, namely:

- environmental (SDGs 6, 13, 14, 15);
- social (SDGs 1, 2, 3, 4, 5, 7, 11, 16, 17);
- economic (SDGs 8, 9, 10, 12).

The symbiosis of these three components forms a qualitatively new level of development of the organization, in which its current growth and prosperity do not harm the life and living conditions of future generations. Universities, as one of the most dynamic organizations, try to quickly integrate the principles of sustainability into their activities. In particular, this applies to the introduction of a sustainable component in curricula (educational activities of universities), its integration into research projects (research work), in the functioning of the campus and in the management system of higher education institutions. Through the implementation of sustainable initiatives of an economic, environmental and/or social nature, universities manage to strengthen their positive impact on the development of the region, society, and national economy. This is very important from the point of view of maintaining the competitive advantage, since the modern higher education institution is not only a place for generating and transferring knowledge. Today, a competitive university is an active agent of sustainable changes in the society and the economy.

#### **Literature review**

In our research, we are based on an integrative approach to identifying key sustainability functions in higher education. Veidemane (2022) attributed education, research, social engagement, campus operations, organizational management, assessment and communication to the key functions.

The results of our comparative analysis of the cases of the world leading universities in the context of sustainable development are consistent with the ideas formulated in research papers by Findler et al. (2019) and Žalėnienė and Pereira (2021). Žalėnienė and Pereira (2021) identified four main vectors of contribution of higher education institutions to SDGs: research, education, management and governance, leadership (Žalėnienė & Pereira, 2021). Findler et al. (2019) systematized the directions of direct and indirect impact of higher education institutions on Sustainable Development. In particular, 'within the institutional framework of the authors identified education (direct impact – qualified workforce; indirect impact – economic growth), research (direct impact – Research uptake in business and policy making; indirect impact – change of social and business practices), outreach (direct impact – cultural dialogue; indirect impact – social cohesion), campus operations (direct impact – GHG emissions caused by operations; indirect impact – contribution to climate change), campus experiences (direct impact – positive attitudes towards SDGs; indirect impact – sustainable lifestyle), higher education (direct impact – in – migration of students; indirect impact – Urban Development)' (Findler et al., 2019).

#### **Method**

The methodological basis of the research is the concept of sustainable development. The main research method is comparative analysis, which involves comparing specific cases of sustainable development of particular higher education institutions in the world.

The data for analysis were obtained from the Times Higher Education Impact Rankings report that is in public domain. This is a new rating that deeply and comprehensively examines the contribution of higher education institutions to the achievement of various SDGs. The evaluation methodology in this rating includes an analysis of a set of parameters that characterize the impact of academic, research and



managerial activities of the university on the sustainable development of the community, region or country as a whole (*Impact Ranking*, 2022). The advantage of the rating is the ability to evaluate both the general position of a particular educational institution among a number of universities around the world, and its role in the implementation of each of the 17 Sustainable Development Goals. The authors of the research paper selected some leading institutions of higher education in different regions of the world for the detailed analysis of their cases of sustainable development.

Applying the grouping method in the study allowed to systematize various sustainable initiatives of universities, grouping them by the main components of sustainable development (environmental, social, economic components).

Within the framework of this research paper, we aim to conduct a comparative analysis of the sustainable development of some of the world leading universities in order to identify best practices and adapt them to the Ukrainian context. During the study, we formulated the following *hypotheses*:

*H1*: the world experience of sustainable development of universities can be implemented in Ukraine, subject to preliminary coordination of best practices with Ukrainian socio-economic, political, geopolitical, research and academic realities;

*H2*: The concept of sustainable development can be successfully used to build a model for the development of Ukrainian higher education institutions in the post-war period.

The research paper is organized in the following way:

- section devoted to the analysis of environmental initiatives of the world leading universities;
- section that analyses individual cases within the framework of universities implementation of the social component of sustainable development;
- section describing sustainable economic initiatives of the world leading universities;
- section that offers the authors' model of sustainable development of Ukrainian higher education institutions in the post-war period;
- conclusions and prospects for further research.

## **Results.**

### *Environmental component of sustainable development*

Sustainable development is often identified only with environmental measures and initiatives. However, this is a false vision that limits the nature of sustainability. Although the environmental component is extremely important in ensuring sustainable development, it is wrong to reduce the idea of sustainability exclusively to environmental aspects, ignoring economic and social ones. In this section of the article, we will analyse some cases of the world leading universities on SDGs 6, 13, 14, 15, that are the goals focused on the implementation of the environmental component of sustainability.

In 2022, the leader of The Times Higher Education Impact Rankings was Western Sydney University (Australia) (*Impact Ranking*, 2022). It is noteworthy that the University was a world leader in achieving SDG 6 “Clean water and sanitation”, and also ranked 9th for SDG 14 “Life below water” and 10th for SDG 15 “Life on land”. The university has created the Environmental Sustainability Unit, which deals with climate change, sustainable energy, water resources, waste, biodiversity, and sustainable farming (*Sustainable development and the SDG's at Western Sydney*, 2023). The University's Living Labs, which are involved in training and research on climate change adaptation, are subordinate to the



Environmental Sustainability Unit.

The University of Technology Sydney (Australia) conducts research on wastewater management, water recycling and treatment, as well as the building of green energy producers (SDG 6); Climate Change Adaptation (SDG 13); Pacific reef conservation (SDG 14); resiliency of species (SDG 15) (*UTS and the United Nations Sustainable Development Goals*, 2023). The effectiveness of these studies is supported by a set of sustainable research centres at the University.

Among Australian institutions of higher education, it is worth highlighting La Trobe University, which implements a number of sustainable initiatives on its campuses: energy efficiency of buildings, carbon neutrality, reduction of greenhouse gas emissions, efficient use of water resources, optimization of waste management, sustainable transport on the territory, generation of its own electricity through the installation of solar photovoltaic installations, etc. (La Trobe University, n.d.).

In 2022, the second place in The Times Higher Education Impact Rankings was occupied by Arizona State University (*Impact Ranking*, 2022). As a member of the new Carbon Economy Consortium and the Global Carbon Removal Partnership, the University is actively involved in initiatives to build a carbon-neutral world. In the top 50 of the rating there were two other American institutions of higher education – Michigan State University and Penn State (Main campus). These universities pay great attention to landscaping of campuses, organizing sustainable transportation, optimizing approaches to waste management, and ensuring energy efficiency of buildings (*About Penn State sustainability*, 2023; *About sustainability at MSU*, n.d.; *Research - Penn State Sustainability Institute*, 2023).

In the third place in The Times Higher Education Impact Rankings in 2022 there is Western University (Canada), which management focuses primarily on ensuring the sustainable development of campuses (*Impact Ranking*, 2022). In the context of the analysis of the implementation of the environmental component of sustainable development by universities, it should be noted that Western University cares about economical and efficient water consumption (SDG 6), protection of land ecosystems (SDG 15), conservation of marine resources (SDG 14), adaptation to climate change (SDG 13) (*UN Sustainable Development Goals*, n.d.). For example, within the framework of SDG 6, the University develops solutions for water purification and water supply management (Western Water Center); reduces the volume of water consumption on campus (installation of special water meters, water taps and shower heads with low water pressure); offers relevant specialized training courses for bachelors and masters. Within the framework of SDG 13, the University develops solid-state batteries, studies the problems of evaluating wind energy potential. In terms of achieving SDG 14, the University conducts research on the location of freshwater fish in countries, and also supports student activities in terms of informing about the state of marine life. In line with SDG 15, the University conducts a study of wild fires and activates the interest of young people in wildlife conservation (*UN Sustainable Development Goals*, n.d.).

Among Canadian higher education institutions that pay great attention to the environmental component of sustainable development, it is worth highlighting Queen's University (Biological Station; Institute for Sustainable Finance; Institute for Energy and Environmental Policy, etc.) (*Queen's secures second consecutive top 10 position globally in Times*, 2022), University of Alberta (Office of Sustainability; Campus as a Living Lab; Sustainability Council) (*University of Alberta*, n.d.), University of Victoria (Ocean Networks; Pacific Institute for Climate Solutions) (*Committing to sustainability*, n.d.), etc.



European Higher Education Institutions focus significantly on the environmental component of sustainable development. Newcastle University (UK) actively organizes a sustainable campus (public drinking water points; specifications for sustainable construction; plantings with relatively low watering needs, reusable tableware, recycling PET-bottles), supports the work of specialized units (Water Research Center, water engineering group, Climate Resilience Center, etc.), encourages sustainable research (on combating the climate crisis, studying marine resources, monitoring changes in ecosystems, preserving biodiversity, etc.) (*UBC Sustainability*, n.d.).

The University of Manchester (UK) was included in the top 10 Times Higher Education Impact Rankings in 2022 (*Impact Ranking*, 2022). As part of the environmental component of sustainable development, the University conducts research on arsenic content in Indian groundwater and its impact on public health (SDG 6); sustainable measures to mitigate the negative impact of climate change (SDG 13); microplastic pollution of British rivers and its threats to ecosystems (SDG 14); reptile and amphibian breeding (SDG 15) (*Supporting the Sustainable Development Goals*, n.d.), etc. It is important that the University necessarily brings the results of research to the stage of specific practical recommendations for authorities, proposals for public organizations and other stakeholders.

In addition to those described above, a number of other European higher education institutions are joining the global movement towards improving the ecological state of the planet, countries, regions, protecting the environment, preserving the seas, oceans, land, and ecosystems. The environmental component of Sustainable Development has become increasingly popular in recent years in the world, as a new generation of students is concerned with global environmental issues and is more responsible for their own impact on the future lives of future generations.

#### ***Economic component of sustainable development***

SDGs 8, 9, 10 and 12 are focused on solving important economic aspects of ensuring the sustainable development of organizations, regions, national economies, and countries. In this section of the research paper, we will present the results of the analysis of the particular cases of positive impact of higher education institutions on the achievement of these goals.

The University of Technology Sydney (Australia) conducts research on safe employment (SDG 8), the production of biopharmaceuticals (SDG 9), and the production of algae bioplastics (SDG 12) (*UTS and the United Nations Sustainable Development Goals*, 2023). The University plays an important role in public life (organizes events aimed at combating the modern slavery, forced and child labour), in the transfer of the latest technologies to the entrepreneurial sector (additive technologies, 3D-printing, etc.), in solving the problems of migrants and supporting Indigenous peoples (*UTS and the United Nations Sustainable Development Goals*, 2023). The university campus implements the plan to abandon disposable plastic packaging, introduces an organized system for recycling household waste, and launches a plastic-free food court – these are initiatives to achieve SDG 12 “Responsible Consumption and Production” (*UTS and the United Nations Sustainable Development Goals*, 2023).

Western University (USA) conducts regular staff surveys regarding the advantages and disadvantages of working at the University, and also supports research at the Center for Human Capital and Productivity (SDG 8) in every possible way (*UN Sustainable Development Goals*, n.d.).

In terms of achieving SDG 9, the University creates conditions that stimulate the



generation of innovative sustainable ideas, the use of innovative technologies in the areas of infrastructure development, the commercialization of research results, and the creation of start-ups. In terms of SDG 10, various aspects of racial or ethnic segregation, migrant integration, cultural diversity, and intercultural communication are studied (*UN Sustainable Development Goals*, n.d.).

Newcastle University (UK) actively interacts with trade unions, takes care of proper remuneration of personnel (SDG 8), invests in renewable energy, ensures energy efficiency of buildings based on innovative technologies (SDG 9), introduces sustainable procurement policies, waste reuse and recycling practices, and tools for their disposal (SDG 12) (*Sustainable development goals*, n.d.). At the institutional level, a number of measures are being taken to ensure equality, inclusivity, and accessibility of the campus for people with disabilities. The University implements an anti-discrimination policy that provides for the observance of the principles of fairness and equality in hiring staff, enrolling students in training (*Sustainable development goals*, n.d.).

The University of Manchester (UK) is permanently reviewing and updating approaches to staff remuneration and social protection, and graduate employment (SDG 8). The University's efforts are also aimed at supporting social entrepreneurs (Social Enterprise Development Fund – financial support) and high – tech companies (Innovation Center – access to infrastructure, advice on intellectual property issues). The university offers a broad program to support young talents from Africa (Master's degree programmes with the condition of returning to the country of origin and promoting its Sustainable Development), implements research projects to study the problems of supporting the poorest segments of the population in Africa and South Asia (*Supporting the Sustainable Development Goals*, n.d.).

The allowed scope of the research paper limits the possibility of describing all the cases of the impact of higher education institutions on the economic component of sustainable development. Modern universities through educational and research activities contribute to the economic growth of the country, the development of industry, the reduction of inequality in society, the introduction of innovations in the economic activities of business entities, building the conscious and responsible attitude to consumption and production. Actually, now the university is an active player in the economic environment, which, along with its social function, performs a number of economic tasks.

#### ***Social component of sustainable development***

The social component of sustainable development covers the issues of overcoming poverty and hunger, ensuring public access to quality education and medicine, gender equality, and ensuring peace and justice. This section of the research paper presents the results of an analysis of the impact of universities on progress in achieving the SDGs 1, 2, 3, 4, 5, 7, 11, 16, 17. Leading institutions of Higher Education have already successfully integrated a sustainable component into their academic activities – in Bachelor's and Master's programmes, as well as in doctoral research on sustainability issues. Let's consider several cases of the impact of universities on the social component of sustainable development through their research and teaching.

As part of its educational activities, the University of Technology Sydney (Australia) trains medical specialists for regional and remote Indigenous communities (SDG 3) and teachers for schools in the Pacific region, engages girls in STEM education (SDG 4), implements mentoring programmes (for example, communication between international students and pensioners to teach them how to work with digital technologies), and introduces support programs for disadvantaged students (SDG 1) (*UTS and the United*



*Nations Sustainable Development Goals*, 2023). As part of its research activities, the University conducts research on the issues of ensuring equity in the global market (SDG 2), promotes the employment of women in academic positions and promotes their careers in the fields of IT and engineering (SDG 5), and supports research projects on equal access of the population to clean energy technologies (SDG 7), on the introduction of innovative technologies focused on improving sustainability and convenience of life (SDG 11) (*UTS and the United Nations Sustainable Development Goals*, 2023). In addition, the University implements a number of important social sustainable initiatives, for example:

- regular provision of free, healthy, eco-friendly food to students (SDG 2);
- provision of personal protective means to low-income countries (SDG 3);
- promotion of smart-city ideas (SDGs 11) and many others (*UTS and the United Nations Sustainable Development Goals*, 2023).

Arizona State University (USA) is actively working to achieve SDG 5 at the global level, in particular, they develop of the Global SDG5 Notification Tool, which is used to monitor the progress of legal gender equality among 190 countries around the world (*ASU leaps to No. 2 globally for UN Sustainable Development Goals, retains top US spot*, 2022). The University specialists also developed a module training on gender education, which was prepared specifically for parliamentarians and government officials to familiarize them with the issues of repealing discriminatory laws against women (*ASU leaps to No. 2 globally for UN Sustainable Development Goals, retains top US spot*, 2022).

Research at Western University (Canada) focuses on addressing poverty (SDG 1), nutrition and food security (SDG 2), probiotic use, testing innovative TB treatment technologies (SDG 3), gender violence (SDG 5), sustainable community development and sustainable transport (SDG 11), reconciliation, justice, legal reconstruction (SDG 16), etc. (*UN Sustainable Development Goals*, n.d.). Among the sustainable activities in the University educational activities, it is worth noting: the introduction of the Master's programme The Global Health System (SDG 3), the development of STEM knowledge in students with autism spectrum disorders, public lectures on community well-being support (SDG 4), material and financial support for students (SDG 1), the popularization of STEM education among girls (SDG 5), the implementation of the Local Government Program for students (SDG 16), the annual contest to reduce energy consumption (SDG 7) (*UN Sustainable Development Goals*, n.d.). The University organizes a huge number of sustainable social initiatives, among which it is worth highlighting the following:

- participation in the project for providing housing for homeless women (SDG 1);
- free legal services to low-income persons (SDG 1);
- support for single mothers who have been subjected to violence (SDG 5);
- support for food security of participants of the educational process (SDG 2);
- measures to support the health and physical activity of older people (SDG 3);
- involvement of employees in health-improving activities (SDG 3);
- advising local authorities (SDG 11);
- humanitarian cooperation with the Red Cross (*UN Sustainable Development Goals*, n.d.).

Newcastle University (UK), as one of the leaders among European higher education Institutions in terms of sustainability, implements a large number of sustainable projects, programmes, initiatives, events and partnerships. In terms of educational activities, the University introduces a number of Bachelor's and Master's programmes on the principles of sustainability, conducts regular information events on food security (SDG 2), provides





financial support to applicants and low-income students (SDG 1), trains highly qualified medical specialists (SDG 3), implements lifelong learning programmes, builds special educational routes for refugees (SDG 4), etc. (*Sustainable development goals*, n.d.). The University is well-known for its research on medical and gender issues. The whole set of sustainable social initiatives of Newcastle University cannot be analysed in one research paper, bearing in mind their large number. Among the most significant initiatives are the following: overcoming child poverty (SDG 1); refugee crisis management (SDG 1); ensuring food security (SDG 2); welfare of staff and students (SDG 3); gender diversity in the academic environment (SDG 5); zero tolerance to discrimination in the workplace (SDG 5); development of student self-government (SDG 16); maintenance of the state of historical buildings of the University (SDG 11) (*Sustainable development goals*, n.d.).

The University of Manchester (UK) has an equally significant influence on the achievement of the SDGs. The most striking examples in educational activities are: attracting dental students to provide free medical services to low-income individuals (SDG 3); training highly qualified teachers for disadvantaged schools, encouraging graduates to find employment in general education school positions (SDG 4) (*Supporting the Sustainable Development Goals*, n.d.). Among the research works in this context, it is worth noting the study of food security in the UK after the economic recession (SDG 2), the study of the power of electronic engineering in the development of agriculture (SDG 2), research on poverty and inequality (SDG 1), research on medical drugs to tackle breast cancer (SDG 3), the development of digital technologies to reduce utility costs for vulnerable families (SDG 7) (*Supporting the Sustainable Development Goals*, n.d.). The University of Manchester promotes employment in every possible way (SDG 1), reduces the pay gap between women and men and increases the level of gender equality in society (SDG 5), implements energy education activities (SDG 7) and a set of cultural activities for the elderly (SDG 11), supports artists in places of armed/military conflicts (SDG 16) and trains emergency medical specialists to work in difficult conditions (SDG 17) (*Supporting the Sustainable Development Goals*, n.d.).

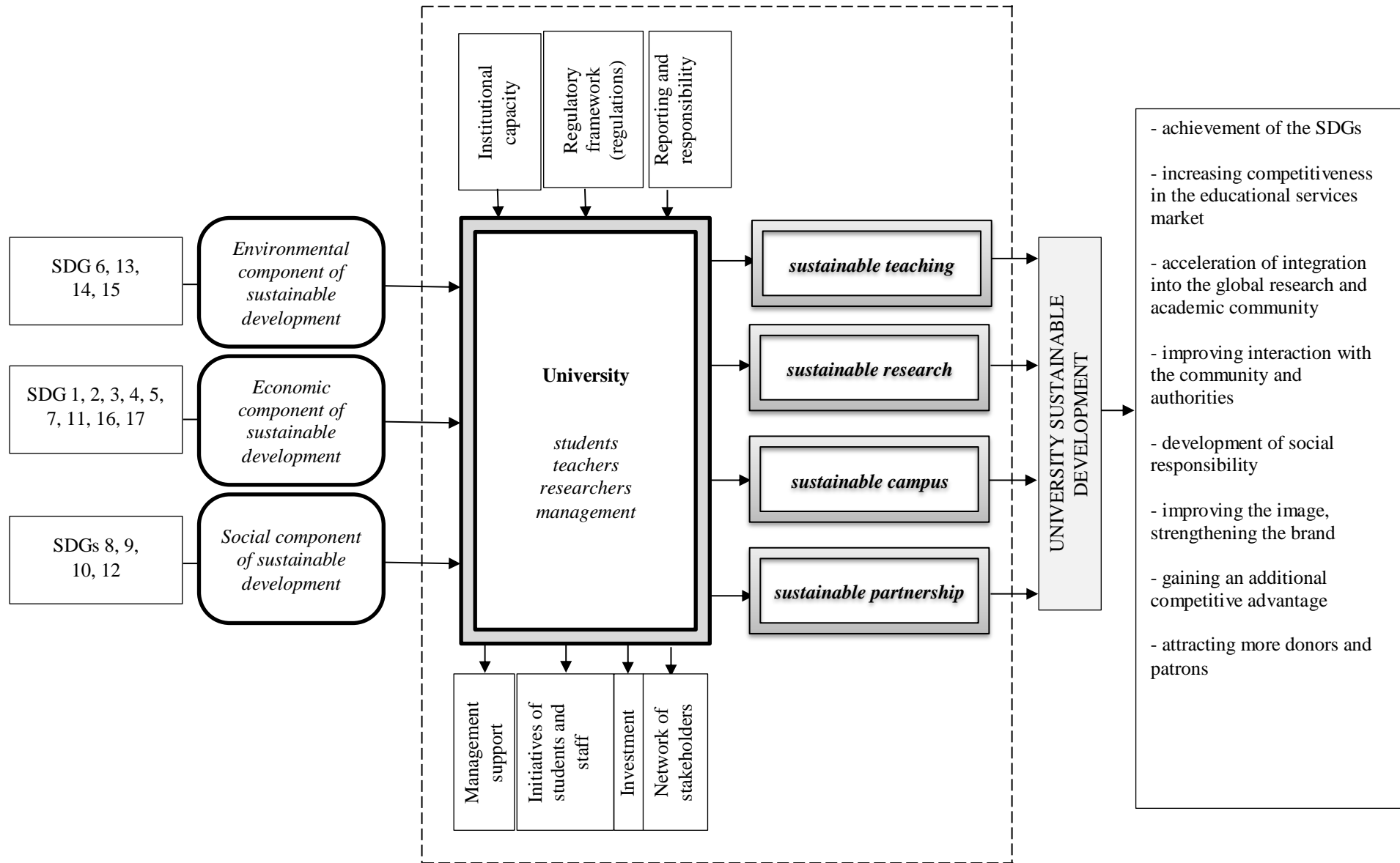
The social component of sustainable development covers many aspects of the functioning of society. Institutions of higher education, as centres of concentration of talents and intelligence, contribute to the achievement of the social SDGs through the implementation of relevant research projects, the introduction of training courses on sustainability, the organization of educational and information campaigns. Moreover, measures taken both at the local (university, regional) and global (international, interregional) levels are effective. The scale of events, projects and programmes depends on the capacity and potential of higher education institutions, the perseverance of their management, and the inspiration of researchers, teachers, and students.

#### ***Model of the University sustainable development***

The analysis of cases of leading higher education institutions allowed us to identify key aspects and components of ensuring sustainable development. The results of conceptualization of the authors' model of sustainable development of higher education institutions in a graphic interpretation are shown in Fig. 1.

At the "entrance" of the model, we have 17 Sustainable Development Goals (SDGs) proposed by the United Nations in 2015. The SDGs are grouped into three components according to their content and priorities (social justice, environmental safety, and economic growth). Therefore, the proposed model is based on these goals and integrates these components into the activities of modern higher education institutions.

**Figure 1**  
*Conceptual scheme of the Model of the University Sustainable Development*





The 'core' of the model is the institution of higher education itself, represented by the synergy of interaction of:

- students through their unconventional creative thinking;
- researchers through their innovative developments and inventions;
- teachers through their initiative and innovative approaches to working with young people;
- management and administrative personnel through their ability to motivate, encourage and support.

Successful implementation of the model of sustainable development of higher education Institutions requires coordinated interaction of all participants of the educational process among themselves and with stakeholders (public, local and central authorities, business), development of relevant regulatory support, strengthening the institutional capacity of universities. The key factor for success of this model is the availability of stable support for sustainable initiatives both from the management of the higher education institution and from partners. Such support can be material and technical, financial, organizational, consulting, expert, methodological, informational, and so on.

The main blocks of the model of sustainable development of higher education institutions are:

I-sustainable teaching-introducing of the principles of sustainability in all educational programmes, mandatory including its aspects in the final qualification papers of students of various majors, as well as in the teaching methods in the framework of different academic disciplines at universities;

II-sustainable research-orientation of fundamental and applied research, research projects of universities to achieve the SDGs, identification of ways and tools to overcome obstacles to the transition of higher education institutions to functioning on the basis of sustainability;

III-sustainable campus-implementation of a set of measures to improve the energy efficiency of university buildings, rational use of water resources, landscaping of the territory, introduction of environmentally friendly transport within the campus, formation of a culture of waste management, etc.;

IV-sustainable partnership-the widest possible involvement of various groups of stakeholders in the implementation of initiatives to achieve the SDGs (not only as beneficiaries of the results and effects obtained, but also as members of project teams for the development of relevant projects, planning a system of measures for their implementation, monitoring the effectiveness of achieving the goals set).

In addition to the above, annual public reporting on sustainable development has become a common practice for the world leading universities. By the way, the issues of popularizing and informing about sustainable development trends for such universities are now vital. This is reflected in the broad coverage of sustainable initiatives on the Internet and in ensuring the involvement of a large number of participants in their implementation. This justifies the need for universities to take responsibility for ensuring sustainable development, maximize its promotion and achieve particular SDGs.



## Discussion

The authors' conceptual model of the university sustainable development proposed in the research paper is consistent with the results of the study presented in (Grecu & Larrañaga, 2014). Grecu and Larrañaga (2014) proposed the Model of the transformation towards the sustainable university. The Model consists of six main blocks: leadership commitment, social network, participation, education and learning, research integration, performance management. These blocks are similar to those described in the University sustainability model.

The authors' model presented in our article is fully consistent with the conclusions and research results of Permatasari and Tindaon (2016). These scientists described the framework of the integrated approach to achieve university sustainability. The integrated approach proposed by the researchers includes three main strategies: university environmental management system (minimize negative impacts of operations, pollution prevention, energy efficiency, resource conservation, waste reduction, green campus buildings, green transportation, etc.), public participation and social responsibility (campus community, alumni, partnership; public lectures, community projects; social justice, etc.), sustainability teaching and research (conferences, seminars, workshops, courses and curriculum, research projects on renewable energy, environmental protection, etc.) (Permatasari & Tindaon, 2016). In the authors' model of the university sustainable development, we emphasize the exceptional importance of comprehensive coverage of all aspects of ensuring sustainability: from supporting the leadership of sustainable initiatives to building a green campus, implementing sustainability courses, and launching sustainable research projects.

## Conclusion

The introduction of the authors' model of sustainable development of higher education institutions proposed in the research paper will allow them to strengthen their own contribution to the achievement of the SDGs, increase the level of competitiveness, integrate into the world research and academic community, and attract more foreign students. In fact, sustainable development can be defined to a certain extent as a competitive advantage of universities, a way to improve its recognition in society, strengthen the brand and image, and deepen social responsibility. The sustainable university, in addition to the above, attracts the attention of various patrons and investors, which has a positive impact on the volume of external investment of the higher education institutions and their financial autonomy.

In 2022 Ukraine faced terrible challenges of war. Higher education institutions have been subjected to enemy attacks by Russian troops and heavy shelling, as a result of which they are partially or completely destroyed, educational and research infrastructure, dormitory buildings and administrative structures were damaged. But the main and most painful thing for Ukrainian universities is the loss of intellectual capital due to the death of people or migration abroad due to military operations in Ukraine. In the post-war period, much attention should be paid to the restoration of educational institutions in the country. The proposed model of sustainable university development can be used as the basis for post-war reconstruction. This will allow not



only to restore the higher education institutions to the pre-war level, but also to transform their educational, research, economic and international activities in accordance with the best international practices and European values. We see prospects for further research in the testing of the authors' conceptual model of sustainable university development proposed in the research paper.

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