УДК 005.5:378:574 UDC 005.6:378:574 DOI:10.33744/0365-8171-2024-115.2-014-023

ASSESSMENT OF UNIVERSITY ACTIVITIES IN THE CONTEXT OF COMPLIANCE WITH THE GOALS OF SUSTAINABLE DEVELOPMENT

ОЦІНЮВАННЯ ДІЯЛЬНОСТІ УНІВЕРСИТЕТУ В КОНТЕКСТІ ВІДПОВІДНОСТІ ЦІЛЯМ СТАЛОГО РОЗВИТКУ



Nykolay Dmytrychenko, Honored Worker of Science and Technology of Ukraine, Sc.D., Professor, National Transport University, Professor of Production, Repair and Materials Science Department, e-mail: dmitrichenko@ntu.edu.ua, tel. (044)2808203, Ukraine, 01010, Kyiv, Omelyanovich Pavlenko str. 1, of. 318,

https://orcid.org/0000-0003-4223-1838



Oleksandr Gryshchuk, Ph.D., Professor, National Transport University, Professor of Truism Department, e-mail: gryshchuk@ntu.edu.ua, tel. (044)2802014, Ukraine, 01010, Kyiv, Omelyanovich Pavlenko str. 1, of. 330,

https://orcid.org/0000-0003-2993-5566



Vitalii Kharuta, Ph.D., Associate Professor, National Transport University, Professor of Transport Law and Logistics Department, e-mail: kharuta_vitaliy@ntu.edu.ua, tel (044) 280-46-67, Ukraine, 01010, Kyiv, Omelyanovich Pavlenko str. 1, of. 328,

https://orcid.org/0000-0002-8897-7558



Anna Kharchenko, Sc.D., Professor, National Transport University, Professor of Transport Construction and Property Management Department, e-mail: anna-x3@ukr.net, tel.+380442807909, Ukraine, 01010, Kyiv, Omelyanovich Pavlenko str. 1, of. 323,

https://orcid.org/0000-0001-8166-6389

Summary. The article is devoted to the analysis of the university's activities in the context of compliance with the UN sustainable development goals. In accordance with the tasks of the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN) project, in which the National Transorthian University participates from 2024, the university's activities in the direction of compliance with the goals of sustainable development. In particular, it was determined which areas of activity of NTU are declared in the main regulatory documents of the university, which correspond to the goals of sustainable development. A PEST and SWOT analysis of the university's activities was also carried out, the main measures and promising steps for the sustainable development of NTU in the near future were determined. The participation of the National Transport University in the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN) project contributed to a comprehensive analysis of the university's activities in the context of the UN sustainable development goals.

Keywords: goals of sustainable development, higher education, analysis of university activities, strategic planning of sustainable development

Introduction.

The rapid development of the world economy dictates more and more new conditions for the successful functioning of the economy of an individual country. Higher education is an integral part of the national economy, therefore the implementation of the concept of sustainable development inevitably affects universities and their activities. All over the world, universities are beginning to integrate elements of the concept into their activities and regulatory frameworks. However, the best possible integration is preceded by a detailed analysis of the university's activities in the context of compliance with the UN sustainable development goals. Conducting such an analysis will allow the university to determine strategic areas of activity with elements of stability.

Presenting main material.

National Transport University (NTU) conducts research and education in interdisciplinary areas of transport, urban engineering and the economy. The NTU is a public higher educational institution governed by Ministry of Education and Science of Ukraine and qualified as a leading in transport sector. It provides training and education services and conducts research activities of fundamental and applied significance. Bachelor's, Master's and Doctor's degree programmes are offered tuition-free or on a fee-paying basis at the expense of businesses and individuals. For now, more than 7 thousand students, including foreigners, study at the university in 107 programmes within 27 specialities. The university consists of departments, faculties, colleges, a doctoral studies division together with technical, administrative, academic and legal support units. There are 6 Faculties: Automotive and Mechanical Engineering; Transport Construction; Management Logistics and Tourism; Economics and Law; Transport and Information Technologies; Correspondence, Distance Learning and Foreign Citizens Training. The university academic and teaching staff is experienced and highly qualified. About 80% of them have academic titles and degrees. They include: 64 Doctors of Science and Professors, 223 Candidates of Science and Associate Professors, 25 Academicians and Associate Members of sectoral academies, 6 Honoured Scientists of Ukraine, 5 Honoured Transport Employees of Ukraine, 4 Eminent Educators of Ukraine. Many lecturers have become the Ukrainian State Prize Laureates in Science and Technology. Postgraduate and doctoral department of the university offers 10 programmes for training qualified professionals. The activity of the university is closely interrelated with the leading enterprises of the transport and road-building complex both in Ukraine and abroad. Now the university has 427 cooperation agreements with businesses. Such cooperation allows introducing into the educational process new concepts in the automotive and road engineering, transport and information technologies, management, economic and legal studies.

According to the Charter of the National Transport University [1], the Development Strategy of the National Transport University for 2019-2025 [2], the main priority directions of the National Transport University from the perspective of sustainable development [3] are (ranked by degree of importance, Fig. 1):

- 1. Training of competitive specialists, recognized in Ukraine and abroad, with a high level of professional competence, intellectual activity, and social responsibility (goal 4).
- 2. Creation of an innovative scientific space. Development of the infrastructure of the University (goal 9).
 - 3. Financial security of the University (goal 8).
- 4. Management of internationalization of scientific and educational activities. Partnership for sustainable development (goal 17).
- 5. Promoting the development of ecological culture, understanding the need for harmony between man and nature and its observance in practice, including in the future professional activities of students (goal 12).
 - 6. Permanent provision of physical education of student youth (goal 3).
- 7. Interaction of the University with authorities and public organizations of the region in solving specific socially significant problems (goal 11).
- 8. Observance of equality, prevention of corruption, ensuring gender equality, combating discrimination (goals 5, 10).
- 9. Support of socially disadvantaged sections of the population (social scholarship, assistance of the trade union committee) (goal 1).
 - 10. Patriotic education, promotion of diplomatic and democratic relations in society (goal 16).
 - 11. Compliance with the safety of the educational environment, proper sanitary conditions (goal 6).

Also, the National Transport University is constantly working on greening its activities and compliance with International Standards. In particular, it should be noted:

- 1. Certificate of recognition of measuring capabilities of the Scientific and Production Center of Transport Construction of NTU, confirming compliance with the requirements of DSTU ISO 10012:2005 (No.PT-94/23 dated 03/24/2023, SE "UKRMETRTESTSTANDART").
- 2. Certificate of conformity of the measurement system of the "Testing Laboratory of Transport Construction Materials Quality" of NTU to the requirements of DSTU ISO 10012:2005 2005 (No. 06-0016/2021 dated 03.12.2021, SE "KYIVOBLSSTANDARTMETROLOGY").
- 3. Conclusions of the state sanitary-epidemiological examination dated 04.14.2014 No. 05.03.02-04/25828 on compliance with the requirements of the NTU premises to state norms and standards in accordance with the Law of Ukraine "On Ensuring the Sanitary and Epidemiological Well-Being of the Population"
- 4. Letter of the State Emergency Service of Ukraine in Kyiv, Pechersk District, 20/568 dated March 14, 2014, on the compliance of the premises of the National Technical University with fire safety standards, norms and rules.
- 5. The University Environmental Program was developed and implemented in accordance with ISO 14001:2006, which was certified in 2009. The successful implementation of the "Environmental Program" is confirmed by certification according to the DSTU standard ISO 14024:2002 (ISO 14024:1999), which certifies compliance with the requirements of SOU OEM 08.002.37.078:2013 "Educational services "green class" and environmental criteria of the life cycle" (2016).
- 6. On March 31, 2023, the National Transport University joined the international program "Clean Air for Ukraine", the main goal of which is to help the residents of Kyiv in the performance of the key task of air quality monitoring notification of deterioration of air quality.



Training of competitive specialists, recognized in Ukraine and abroad, with a high level of professional competence, intellectual activity, social responsibility



Creation of an innovative scientific space. Development of the infrastructure of the University



Financial security of the University



Management of internationalization of scientific and educational activities. Partnership for sustainable development



Promoting the development of ecological culture, understanding the need for harmony between man and nature and its observance in practice, including in the future professional activities of students



Permanent provision of physical education of student youth



Interaction of the University with authorities and public organizations of the region in solving specific socially significant problems



Observance of equality, prevention of corruption, ensuring gender equality, combating discrimination



Support of socially disadvantaged population groups (social scholarship, trade union committee assistance)



Patriotic education, promotion of diplomatic democratic relations in society



Compliance with the safety of the educational environment, proper sanitary conditions

Figure 1 – Declared areas of activity of NTU in the context of UN sustainable development goals *Рисунок 1* – Задекларовані напрямки діяльності НТУ в контексті цілей сталого розвитку ООН

In addition, a number of educational programs of the National Transport University include courses that are already taught and reflect aspects of sustainable development. These are the courses: "Ecology", "Fundamentals of ecology", "General ecology and neo-ecology", "Strategy of sustainable development of transport infrastructure", "Ecology of transport", "Environmental support systems of transport infrastructure objects", "Impact on people and the environment, safety and sustainability", "Sustainable development and optimization technologies of global environmental management processes", "Geoinformation ecomonitoring", "Environmentally responsible management of projects and programs", "Management of social and environmental safety projects in transport systems", "Environmental problems of transport", "Management of environmental protection activities", "Management of environmental protection activities", "Inclusive circular economy", "Fundamentals of sustainable development", "No-waste and low-waste technologies", "Technologies of production of materials from man-made waste and substandard materials", "Ecological tourism", "Ecological and economic evaluation use of property potential and economics of nature use", "Environmental law", "Environmental marketing", "Environmentally clean production and technologies", "Management of social and environmental risks", "Professional environmental activity of an expert", "Environmental certification", "Management of international environmental systems", "Macrologistic systems and sustainable development", "Environmental protection during the life cycle of the road", "Environmental safety of passenger transport in cities", "Environmental ecology", "Greening of internal combustion engines" and others [4].

Within the framework of the project the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN), NA DAAD: 2023-1-DE01-KA220-HED-000157119, funding program "Erasmus+ KA220-HED - Partnerships in the field of higher education" during the first quarter of 2024 a PEST analysis and a SWOT analysis of the activities of the National Transport University were performed.

The tasks of the PEST analysis were – assess the current state of the development of strategies for sustainability management of universities in EU and Ukraine, in order to provide a good knowledge basis to the partner universities and working groups in this project. PEST analysis is a marketing tool designed to identify political (P), economic (E), social (S) and technological (T) aspects of the external environment that affect the university's activities [5].

The task of the SWOT analysis was to assess the state, experience and needs of teaching in the field of sustainable development science at partner universities in Ukraine in order to identify strengths, weaknesses, opportunities and threats.

The importance of using this tools for evaluating university performance has been emphasized along with modern studies [6-7].

As a result of the PEST analysis, a matrix was obtained (Fig. 2).

Analyzing the PEST analysis matrix, it can be concluded that political and economic factors exert the greatest macro-influence on the activities of the National Transport University. Therefore, the next step in the study of the activity of NTU was to conduct a SWOT analysis. A SWOT analysis (or SWOT matrix) is a strategic planning and strategic management technique used to help a university identify its strengths (S), weaknesses (W), opportunities (O), and threats (T). related to sustainable development planning in this case [8].

As a result of the study, a SWOT analysis of NTU activities was conducted and a corresponding matrix was constructed (Fig. 3).

Political	Economical
Political stability. Changes in legislation in the field of higher education.	General characteristics of the economic situation (rise, stabilization, decline) and the economy's need for specialists in a certain specialty.
State influence on the education sector, in particular, through various funding models. State regulation of competition in the field of education, in particular, at the expense of different conditions for the admission of applicants to various specialties (special support, additional independent testing, etc.), as well as different conditions for obtaining qualifications (attestation, a Single Qualifying Exam, admission to the profession).	The exchange rate of the national currency and the refinancing rate, in particular, the impact on the cost of the contract for those seeking higher education, the university's expenses for teachers' salaries. Inflation rate (increase in the amount of material expenses of the university). Energy price fluctuations. Participation in scientific and international projects.
Tax policy. Social	Technological
Demographic changes. Change in the income structure of customers of educational services (decrease or increase in opportunities for consumers to obtain higher education). Attitudes towards work and rest (the university's ability to provide decent wages and rest for staff). Social mobility of the population (applicants' ability to freely move between settlements, for example, moving to another city for higher education). Consumer activity (the general need of the population to obtain higher education).	State policy in the field of innovative scientific and educational developments. Promotion of the state to the commercialization of scientific and educational developments of scientific and pedagogical personnel of the university. The level of technology in the road and transport complex as a factor in updating educational programs. University access to modern educational tools and learning technologies, scientometric databases, educational platforms and projects.

Figure 2 – Matrix of PEST analysis of NTU activities **Рисунок 2** – Матриця PEST-аналізу діяльності НТУ

	Helpful to achieving theobjective	Harmful to achieving theobjective
	Strength	Weakness
	1. The university has a positive image, is in the TOP 100, received the "Quality Star" award and the Expert opinion as the Best University of Ukraine in 2020.	1. The need for constant improvement of the infrastructure and technical support of the university in connection with progress in the technical field. 2. Insufficient level of academic mobility of students of
Internal origin	2. The vast majority of teachers have experience in participating in scientific projects that are carried out both at the expense of the state and at the request of legal entities. In particular, scientific teams of NTU have developed state standards and regulatory documents that meet the goals of sustainable development. The experience of teachers is used both to improve the educational process under the educational programs of the university and to develop scientific project activities.	higher education. 3. The need to constantly increase motivation and stimulate the professional development of scientific and pedagogical workers in connection with the unstable economic situation.
	3. Has certified laboratories and equipment.	
	4. A wide range of licensed software is available.	
	5. The university is connected to participation in environmental projects and programs of Kyiv, Ukraine and foreign partners.	
	Opportunity	Threats
External origin	1. The university has many connections with	1. The instability of the political situation in Ukraine.
	representatives of the industry and other higher education institutions, foreign partners.	2. Martial law, restrictions for men.
	2. A favorable climate for the development of innovative teaching technologies has been created.	3. Reforming the field of education (consolidation of universities, changes in the list of specialties, regulation of professions, regulation of the scientific component of
	3. Scientific and pedagogical personnel have opportunities to participate in international training, internship, research and exchange	teachers' workload, etc.). 4. Reduction in the number of applicants and students.
ᅙ	programs.	5. Changes in the needs of the labor market for
	4. Involvement of partner companies in	specialists.
	cooperation (for internships by students,	
	participation in applied research, joint public events).	

Figure 3 – Matrix of SWOT analysis of NTU activities *Рисунок 3* – Матриця SWOT-аналізу діяльності НТУ

The main steps of NTU according to the direction of the project were:

- updating educational programs taking into account the goals of sustainable development (inclusion of educational components and/or discipline modules);
 - participation of the university in the international program "Clean air for Ukraine";
- participation in scientific programs and research in accordance with the goals of sustainable development (DAAD, ERASMUS+, State Agency for Reconstruction (Ukraine) and others);

- introduction of a waste paper collection program at the university for the purpose of its further processing (Department of Ecology and Environmental Protection Technologies);
- maintaining the premises of the university in compliance with sanitary and epidemiological norms and standards;
- the Environmental Program of the university was developed and implemented in accordance with ISO 14001:2006, which was certified in 2009;
- the University is a collective member of the Technical Committee on Standardization "Environmental Protection (TK82)" of the National Certification Body of Ukraine;
- participation in the "UKRENERGY" project, which is aimed at introducing the best EU best practices in the field of educational methodologies related to energy efficiency and energy planning, in training future specialists of the construction industry of Ukraine;
 - cooperation with external stakeholders regarding sustainable development goals.

The steps foreseen according to the direction of the project:

- monitoring of educational programs in the direction of their compliance with the goals of sustainable development and development of relevant proposals for their renewal;
- monitoring of the material and technical base in the direction of reducing the negative anthropogenic impact on the environment, ensuring energy conservation, resource conservation;
- active participation in the development of the concept of sustainable development of the management system of higher education institutions;
- active participation in the "UKRENERGY" project, updating educational programs of engineering specialties;
- cooperation with the State Agency for Reconstruction of Ukraine in order to develop scientific and applied approaches to the restoration and development of critical infrastructure;
 - active work on the inclusion of NTU in international university rankings;
 - submitting environmental startups of teachers and students to international competitions;
- deepening cooperation with communities, nature reserves, public nature conservation organizations and other stakeholders in the direction of sustainable development goals.

Conclusions. The participation of the National Transport University in the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN) project contributed to a comprehensive analysis of the university's activities in the context of the UN sustainable development goals. A study of awareness and understanding of the concept of sustainable development by university management and curantors of educational programs was conducted. This determined the degree of acceptance of the concept and how it is reflected in the educational process and university management. It also made it possible to form the main perspective directions for ensuring the sustainable development of the National Transport University.

References

- 1. Charter of the National Transport University (2023). URL: http://vstup.ntu.edu.ua/publichna info/statut-ntu.pdf [in Uhrainian]
- 2. Development strategy of the National Transport University for 2019-2025. URL: http://www.ntu.edu.ua/wp-content/uploads/2019/12/monitoring_ntu.pdf [in Uhrainian]
- 3. United Nations Development Programme (2022). URL: https://www.undp.org/sustainable-development-goals
- 4. Report based on the results of a survey of the curantors of the educational programs of the National Transport University regarding the extent to which the university's educational programs cover the UN sustainable development goals (2024). URL: http://www.ntu.edu.ua/pidrozdili/navchalno-metodichne-upravlinnya/viddil-zabezpechennya-yakosti-osviti-ta-praktichnoi-pidgotovki/ [in Uhrainian]

- 5. PEST analysis. Material from Wikipedia, the free encyclopedia. URL: https://uk.wikipedia.org/wiki/PEST-%D0%B0%D0%BD%D0%B0%D0%BB%D1%96%D0%B7 [in Uhrainian]
- 6. Cox, J. (2021). The higher education environment driving academic library strategy: A political, economic, social and technological (PEST) analysis. The Journal of Academic Librarianship, 47(1), 102219. https://doi.org/10.1016/j.acalib.2020.102219
- 7. Pedchenko, N., Hasii, O., & Vlasenko, V. (2023). Metodolohiia provedennia SWOT-analizu pry formuvanni kontseptsii rozvytku pryvatnoho zakladu vyshchoi osvity. Naukovyi visnyk Poltavskoho universytetu ekonomiky i torhivli. Seriia «Ekonomichni nauky», (1 (107), 75-84. https://doi.org/10.37734/2409-6873-2023-1-11 [in Uhrainian]
- 8. SWOT analysis. From Wikipedia, the free encyclopedia. URL: https://en.wikipedia.org/wiki/SWOT_analysis

ASSESSMENT OF UNIVERSITY ACTIVITIES IN THE CONTEXT OF COMPLIANCE WITH THE GOALS OF SUSTAINABLE DEVELOPMENT

Дмитриченко Микола Федорович, Заслужений діяч науки і техніки України, доктор технічних наук, професор, Національний транспортний університет, професор кафедри «Виробництво, ремонт та матеріалознавство», е-mail: dmitrichenko@ntu.edu.ua, тел. (044) 2808203, Україна, 01010, м. Київ, вул. Омеляновича-Павленка, 1, к. 318. https://orcid.org/0000-0003-4223-1838

Грищук Олександр Казимирович, кандидат технічних наук, професор, Національний транспортний університет, професор кафедри туризму, e-mail: gryshchuk@ntu.edu.ua, тел. (044) 280-20-14, Україна, 01010, м. Київ, вул. Омеляновича-Павленка, 1, к. 330. https://orcid.org/0000-0003-2993-5566

Харута Віталій Сергійович, кандидат технічних наук, доцент, Національний транспортний університет, професор кафедри транспортного права та логістики, e-mail: kharuta_vitaliy@ntu.edu.ua, тел. (044) 280-46-67, Україна, 01010, м. Київ, вул. Омеляновича-Павленка, 1, к. 328, https://orcid.org/0000-0002-8897-7558

Харченко Анна Миколаївна, доктор технічних наук, професор, Національний транспортний університет, професор кафедри транспортного будівництва та управління майном, e-mail: anna-x3@ukr.net, тел. +380442807909, Україна, 01010, м. Київ, вул. Омеляновича-Павленка, 1, к. 323, https://orcid.org/0000-0001-8166-6389

Анотація: Стаття присвячена розгляду питання аналізу діяльності університету в контексті відповідності цілям сталого розвитку ООН. Відповідно до завдань проекту the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN), в якому Національний трансортний університет приймає участь з 2024 року, було проаналізовано діяльність університету в напрямку відповідності цілям сталого розвитку. Зокрема, було визначено які напрямки діяльності НТУ задекларовані в основних нормативних документах університету, що відповідають цілям сталого розвитку. Також було проведено PEST та SWOT-аналіз діяльності університету, визначені основні заходи та перспективні кроки задля сталого розвитку НТУ у найближчій перспективі. Таким чином, участь Національного транспортного університету у проекті the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN) позитивно сприяла комплексному всебічному аналізу діяльності університету в контексті цілей сталого розвитку ООН.

Ключові слова: цілі сталого розвитку, вища освіта, аналіз діяльності університету, стратегічне планування сталого розвитку

Перелік посилань

- 1. Статут Національного транспортного університету (2023). URL: http://vstup.ntu.edu.ua/publichna info/statut-ntu.pdf
- 2. Стратегія розвитку Національного транспортного університету на 2019-2025 роки. URL: http://www.ntu.edu.ua/wp-content/uploads/2019/12/monitoring_ntu.pdf
- 3. United Nations Development Programme (2022). URL: https://www.undp.org/sustainable-development-goals
- 4. Звіт за результатами опитування гарантів освітніх програм Національного транспортного університету щодо ступеня охоплення освітніми програмами університету цілей сталого розвитку ООН (2024). URL: http://www.ntu.edu.ua/pidrozdili/navchalno-metodichne-upravlinnya/viddil-zabezpechennya-yakosti-osviti-ta-praktichnoi-pidgotovki/
- 5. PEST-аналіз. Матеріал з Вікіпедії вільної енциклопедії. URL: https://uk.wikipedia.org/wiki/PEST-%D0%B0%D0%BD%D0%B0%D0%B8%D1%96%D0%B7
- 6. Cox, J. (2021). The higher education environment driving academic library strategy: A political, economic, social and technological (PEST) analysis. The Journal of Academic Librarianship, 47(1), 102219. https://doi.org/10.1016/j.acalib.2020.102219
- 7. Педченко, Н., Гасій, О., & Власенко, В. (2023). Методологія проведення swot-аналізу при формуванні концепції розвитку приватного закладу вищої освіти. Науковий вісник Полтавського університету економіки і торгівлі. Серія «Економічні науки», (1 (107), 75-84. https://doi.org/10.37734/2409-6873-2023-1-11
- 8. SWOT analysis. From Wikipedia, the free encyclopedia. URL: https://en.wikipedia.org/wiki/SWOT analysis

The article was prepared within the framework of the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN) project, NA DAAD: 2023-1-DE01-KA220-HED-000157119

Cmammя підготовлена в рамках виконання проекту the Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN), NA DAAD: 2023-1-DE01-KA220-HED-000157119

Дата надходження до редакції 09.07.2024