

The Project “Green Transition in Ukrainian Universities”

Green Transition University

Self-Assessment Report

Institution	<i>Lviv Polytechnic National University</i>
Period	<i>2022/2023</i>
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Introduction

This report of self-assessment is based on the principal of the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries and universities. This document consists of the four parts: green researcher, green education, green campus, and overall assessment.

The main tasks of such self-assessment is to clarify the main strong and weaknesses of green transition of Lviv Polytechnic National University.

The self-assessment methodology was developed by a group of specialists within the framework of the NAWA project "Green Transition of Ukrainian Universities" and is based on both qualitative and quantitative indicators.

During the self-assessment, the authors tried to avoid subjectivism in order to obtain real results that would stimulate the further development of the academic community of the university.

Position in UI Green Metric World University Rankings 2022:

Global – 399 (1050), National - 4 (17)

<https://lpnu.ua/en/news/polytechnic-fourth-among-ukrainian-universities-ui-greenmetric-world-university-ranking-2022>

Part 1 Green Research

1.1. Is there an institutional, divisional, or university sustainability/green transition planning and action in research activities?

The University's Scientific and Technical Council (STC) has approved a research plan for 2024-2025, which includes several topics related to sustainability/green transition. For example:

- Phytomeliorative restoration of landscapes damaged by military activities by creating highly productive plantations resistant to chemical pollution and climate change (Department of Environmental Safety and Environmental Protection).
- Disposal of plastic waste in technologies with final biodegradation (Department of Civil Security).
- Comprehensive studies of wastewater treatment on a bioplato (Department of Ecology and Sustainable Nature Management).
- Development of a highly efficient alternative solid fuel from secondary raw materials of organic origin (Department of Chemical Engineering).

1.2. Regardless of the origin of green transition strategy in research do these initiatives receive the support needed for being successful?

Unfortunately, in today's war conditions, topics related to the country's defense capability are overwhelmingly supported. However, above-mentioned STC also supported topics related to the post-war reconstruction of the country, in particular those related to the green transition strategy. For example:

- Development of energy supply, energy efficiency, and economic circularity in the context of European integration and post-war recovery of the national economy of Ukraine (Department of Foreign Economic and Customs Activities).
- Development of sorbents with a complex of antibacterial and catalytic properties for water purification (in particular, in areas where military operations are taking place or have taken place) (Department of Chemistry and Technology of Inorganic Substances).

1.3 Are there internal policies in place to monitor the alignment of the research strategy with specific Sustainable Development Goals and to assess progress?

No, there is no such policy.

1.4 Does the university have thematic communities (formal or informal) in areas related to the Sustainable Development Goals (priorities SDG7, SDG8, SDG9, SDG11, SDG12, SDG13, SDG15)?

There are such examples of thematic communities:

- Scientific Research Laboratory of Environmental Technologies No 121 for the purpose of organizing scientific research, performing scientific research, providing scientific and consulting services, producing scientific documentation to the order of enterprises,

organizations, institutions and firms, carrying out innovative activities (SDG13, SDG15).
<https://lpnu.ua/ndl-121>

- The scientific school of DScTech., Prof. Myroslav Maliovanyi from the Department of Ecology and Sustainable Environmental Management (SDG13, SDG15). The scientific work of this school is aimed at developing engineering methods of environmental protection to ensure the sustainable development of society. The main scientific direction is environmental protection technologies with the use of natural dispersed sorbents and mineral fertilizers of prolonged action.
<https://lpnu.ua/en/esem/research-department>
- The scientific school of DScTec., Prof. Ihor Shchur from the Institute of Power Engineering and Control Systems (SDG7, SDG9). The scientific work of this school is aimed at developing new systems of renewable energy and energy storage for low-power applications by individual consumers, electric transport systems, modeling of multi-physical systems on the energy approach and developing of energy-based control systems. <https://lpnu.ua/eks/naukova-diialnist>
- The scientific school of DScTech., Prof. Zenovii Znak from the Department of Chemistry and Technology of Inorganic Substances (SDG6). The scientific work of this school is aimed at developing energy- and resource-saving technologies of natural purification and conditioning of wastewater, in particular, based on catalytic, cavitation, cavitation-oxidation, and sorption processes. <https://lpnu.ua/htnr/naukova-diialnist-kafedry>

1.5. Which departments have been visibly successful in dealing with green transition issues in the field of research and development activities? What explains their success?

The most successful research aimed at green transition is Viacheslav Chornovil Institute of Sustainable Development and IPEC (Institute of Power Engineering and Control Systems). This is due to the training of students in the areas of ecology, environmental management, tourism, renewable energy, electric transport, etc. Accordingly, the teaching and research staff of the departments of these institutes are specialists in these areas, in which their scientific interests are formed.

In the Institute of Economics and Management, a scientific direction on the economics of sustainable development headed by prof. Kuzmin is created, the result of which is the defense of two doctoral theses and five candidate theses, over the past 5 years.

In recent years, in the Institute of Power Engineering and Control Systems, 4 research projects funded by the Ministry of Education and Science of Ukraine has completed, which were dedicated to the development and research of new solutions in wind energy, solar energy, energy storage systems, electrical power supply systems and electric drive systems of electric vehicles. In the direction of renewable energy and E-mobility under the leadership of prof. Shchur, a scientific school was created, the graduates of which work both at the Lviv Polytechnic and at specialized firms in the region.

Table 1.1. Self-Ratings of Green Research

OBJECTIVES	INDICATORS	<u>RATING</u> Evidence of Institutional/ Faculty recognition & action <hr/> 0 = No 1 = Minimal 2 = Weak 3 = Adequate 4 = Strong 5 = Very strong	<u>URL or location of supporting documents</u> (e.g., strategic and organizational plans, meeting agendas or minutes, white papers, mission & policy statements, etc.)
<p>The university promotes the activities and results of the research teams' work on achieving the Sustainable Development Goals among external stakeholders.</p>	<p>University's podcasts, social media, online/offline public speaking, YouTube channels, etc.</p>	<p>5</p>	<p>Conferences: V International Symposium «EU Circular Economy: Lessons for Ukraine» https://lpnu.ua/en/news/v-international-symposium-eu-circular-economy-lessons-ukraine-took-place-online Academics and students of the Institute of Sustainable Development participated in the 5th International Ecoforum «Water and Energy»</p>

		<p>https://lpnu.ua/en/news/academics-and-students-isd-participated-5th-international-ecoforum)</p> <p>On the agenda – Environmental Security: the V International Congress on Sustainable Development was held at University https://lpnu.ua/en/news/v-international-congress-sustainable-development-was-held-university)</p> <p>Partnership of Ukrainian and Polish scientists at the conference on Water Supply and Wastewater Disposal https://lpnu.ua/en/news/partnership-ukrainian-and-polish-scientists-conference-water-supply-and-wastewater-disposal)</p> <p>Webinars: The Project Office held a webinar on the possibilities of grant support for environmental initiatives https://lpnu.ua/en/news/project-office-held-webinar-possibilities-grant-support-environmental-initiatives)</p> <p>Seminars:</p>
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			<p>New opportunities from the UGF platform: online lectures for students, postgraduates and teachers in October (https://lpnu.ua/en/news/new-opportunities-ugf-platform-online-lectures-students-postgraduates-and-teachers-october)</p> <p>Lviv Polytechnicians learned from the experience of guests from Kaunas University of Technology (Lithuania) about waste management system (https://lpnu.ua/en/news/lviv-polytechnicians-learned-experience-guests-kaunas-university-technology)</p>
The university has mechanisms for assessing planned/prepared research projects for the environmental impact of activities during project implementation.	Institutional documentation, which defines the assessment procedure for planned/prepared research projects	0	
The university has the mechanisms to promote and stimulate research activities to minimize environmental impact.	Institution documentation, which describes the mechanism for promotion and stimulation	0	

<p>The University ensures the implementation of the results of research projects to achieve the Sustainable Development Goals in the educational process.</p>	<p>The list of cases and best practices</p>	<p>5</p>	<p>As a rule, the results of completed scientific projects are implemented by their authors in the courses of specific educational disciplines, which is confirmed by relevant acts of implementation</p> <p>https://lpnu.ua/sites/default/files/2023/10/25/paragraphs/53643/cil-6-chista-voda-ta-nalezhni-sanitarni-umovi.pdf</p> <p>https://lpnu.ua/sites/default/files/2023/10/25/paragraphs/53643/cil-7-dostupna-ta-chista-energiya.pdf</p> <p>https://lpnu.ua/sites/default/files/2023/10/25/paragraphs/53643/cil-12-vidpovidalne-spozhyvannya-ta-virobnictvo.pdf</p> <p>https://lpnu.ua/sites/default/files/2023/10/25/paragraphs/53643/cil-13-pomyakshennya-naslidkiv-zmini-klimatu.pdf</p> <p>https://lpnu.ua/sites/default/files/2023/10/25/paragraphs/53643/cil-15-zakhist-ekosistem-sushi.pdf</p>
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Part 2 Green Education

2.1. Does more than one university unit (division, school, department, etc.) have specific responsibilities for green education?

Viacheslav Chornovil Institute of Sustainable Development - The main purpose of the institute is to train specialists for such a high-priority development fields of science, education and economy of Ukraine as balanced management of nature, environmental protection, ecological security, and tourism economy.

Institute's Departments

- CS Department of Civil Safety
- DT Department of Tourism
- EEG Department of Entrepreneurship and Environmental Examination of Goods
- ESEM Department of Ecology and Sustainable Environmental Management
- ESNP Department of Ecological Safety and Nature Protection Activity

2.2. Is “green transition” as subject, topic, option, etc. taught in any non-engineering or engineering departments or faculties?

The Institute of Power Engineering and Control Systems has an educational program "Sustainable Energy Systems (Renewable Energy and Electromobility)", within which two graduate departments of the institute train bachelors and masters in two areas:

- Renewable Energetics
- E-mobility

Viacheslav Chornovil Institute of Sustainable Development

SPECIALTIES (EDUCATIONAL PROGRAMS) OF THE FIRST (BACHELOR'S) LEVEL

- Ecology
- Labor protection
- Environmental information systems
- Tourism and recreation

SPECIALIZATIONS (EDUCATIONAL PROGRAMS) OF THE SECOND (MASTER'S) LEVEL

- Environmental control and audit
- Ecology
- Ecology and environmental protection
- Applied ecology and sustainable environmental management
- Industrial safety and labor protection
- Environmental protection technologies
- Tourism studies

OF THE THIRD LEVEL OF EDUCATION

101 Ecology - Order of the Ministry of Education and Science of Ukraine No. 19-I dated February 22, 2021.

2.3. Are there approved regulations/mechanisms/procedures in the University with recommendations on the need to reflect the selected GSDs in the objectives, orientation, and main focus of the study program? (Please add the link at the University site).

Environmental policy of Lviv Polytechnic National University (Environmental Policy of Lviv Polytechnic National University)

Information about the document - Order № 271-1-10 of May 29, 2023 (Date 2023-06-05)
(<https://lpnu.ua/en/environmental-policy>)

Academic commitments *To develop educational, in particular international, Bachelor's, Master's, and postgraduate programs in the field of ecology, environmental protection, and sustainable nature management. To promote environmentally conscious lifestyles and ideas of sustainable development among higher education students through open lectures, and popular scientific and practical events. To ensure that students of Bachelor's, Master's, and postgraduate education have the opportunity to study a wide range of environmental disciplines, including those dedicated to environmental safety and climate change adaptation, as optional disciplines. To implement educational programs in the field of ecology and environmental sustainability to improve the skills of representatives of enterprises, organizations, institutions, state and municipal authorities in the region. To promote the professional development of the University's research and academic teaching staff in the field of ecology, environmental protection, and sustainable use of natural resources.*

2.4. How is green transition education delivered (in the form of elective courses, as a defined module or option, a degree program, or a mixture of formats)?

In the form of elective courses:

- Ecological design
- Economic, social and environmental sustainability of projects and programs
- Ecology
- Environmental and climate resilience of the EU
- Environmental management of the industry
- Life safety and ecology at industrial transport enterprises
- Discipline «Internet marketing» within the project «E-marketing of conscious consuming» (<https://lpnu.ua/en/news/discipline-internet-marketing-within-project-e-marketing-conscious-consuming>)

The elective discipline «Internet marketing» for students of the first (bachelor's) higher education level within the project «Dissemination of EU practices through e-marketing, conscious consumption, circular economy, resource efficiency» of the EU Erasmus+ program directed by Jean Monet.

As a defined module or option:

The International Winter School «Environmental Security of Ukraine: Challenges or Opportunities?» (<https://lpnu.ua/en/news/international-winter-school-environmental-security-ukraine-challenges-or-opportunities-has>)

As a degree program:

- **bachelor**
 - Ecology (<https://lpnu.ua/istr>)
 - Environmental information systems (<https://lpnu.ua/istr>)
 - Energy systems for sustainable development (Renewable energy and E-mobility) – (<https://lpnu.ua/iesk>)
- **master**
 - Innovative Master Courses Supporting the Improvement of the Energy and Carbon Footprint of the Ukrainian Building Stock (UKRENERGY) (<https://erasmus-ukrenergy.unige.it/>)

Project aims and tasks: Establishment of new Master Courses (MCs) on “Energy Efficiency, Building Retrofitting and Energy Planning” in Ukrainian Universities (UAUs) and promotion of EU best practices in the terms of educational methodologies and specific knowledge related to the energy efficiency and sustainability of buildings.

- Environmental protection technologies (<https://lpnu.ua/istr>)
- Applied ecology and balanced nature management (<https://lpnu.ua/istr>)
- Ecology and environmental protection (<https://lpnu.ua/istr>)
- Systems of renewable energy and E-mobility (<https://lpnu.ua/iesk>)
- Energy security (<https://lpnu.ua/iesk>)
- **PhD**
 - 101 Ecology – Order of the Ministry of Education and Science of Ukraine No. 19-I of February 22, 2021.

Within the framework of the project implementation under the Erasmus+ Program

- Within the framework of the project implementation «Synergy of educational, scientific, managerial and industrial components for climate management and climate change prevention» (CLIMAN 619119-EPP-1–2020–1-NL-EPPKA2-CBHE-JP) of the Erasmus+ programme:

The Summer School Technological and Economical Aspects of Climate Change Adaptation will be held at the University (<https://lpnu.ua/en/news/summer-school-technological-and-economical-aspects-climate-change-adaptation-will-be-held>)

- under the Erasmus+ CLIMAN project «Synergy of educational, scientific, management and industrial components for climate management and climate change prevention» (project code – 619119-EPP-1–2020–1-NL-EPPKA2-CBHE-JP):

The International Summer School «Technological and Economical Aspects of Climate Change Adaptation Strategy» (<https://lpnu.ua/en/news/university-runs-international-summer-school-technological-and-economical-aspects-climate>)

- Dissemination of EU practices through e-marketing, conscious consumption, circular economy, resource efficiency (<https://lpnu.ua/en/e-marketing>)
- Green School within the project «E-marketing» Jean Monnet Modules Erasmus+ (<https://lpnu.ua/en/news/green-school-within-project-e-marketing-jean-monnet-modules-erasmus>)

- «Earth Day-2023» event was held within the project E-marketing Jean Monnet Modules Erasmus+ (<https://lpnu.ua/en/news/earth-day-2023-event-was-held-within-project-e-marketing-jean-monnet-modules-erasmus>)

2.5. Are the results of cooperation with employers and other stakeholders taken into account in new study programmes and modifying existing curricula to achieve the selected goals from the list of SDGs? (Please add examples of good practices).

Collaboration with industry companies

- Long-term cooperation between the Institute of Power Engineering and Control Systems with the Danish company "Mita-Technik" (currently absorbed by the Emerson Electric Corporation) led to the opening of the undergraduate educational program "Energy Systems for Sustainable Development (Renewable Energy and Electric Mobility)", and later of the master's educational program "Renewable energy and E-mobility", which corresponds to goal 7 from the list of SDGs - Affordable and clean energy (<https://lpnu.ua/en/ipec>, <https://lpnu.ua/news/zustrich-z-uspishnymy-vypusknymy-kafedry-eks-iaki-pratsiuut-u-kompanii-emerson-electric>)

- IEM hosted an open lecture within the Erasmus+ Jean Monnet module Circle (<https://lpnu.ua/en/news/iem-hosted-open-lecture-within-erasmus-circle>)

Within the framework of the Erasmus+ Jean Monnet module «EU competitiveness boosting: circular economy» (Circle), the successful and socially responsible businessman told academic staff and students of Lviv Polytechnic Institute of Economics and Management about the business of the future in the ECO style.

- An open lecture on Resource Efficiency and presentation of the Povtor project took place at the FTC Department (<https://lpnu.ua/en/news/open-lecture-resource-efficiency-took-place-ftc-department>)

An open lecture «Resource Efficiency as an Element of the Circular Economy» conducted by Oksana Muzychenko, CSc (Econ.), Associate Professor at the Department of Business Economics and Investment, the Institute of Economics and Management, was held at the Department of Foreign Trade and Customs, Lviv Polytechnic, within the framework of the implementation of the Jean Monnet Module «EU competitiveness boosting: circular economy». Also there was a presentation of the Povtor project – online supermarket with reusable packaging – of the graduates of the FTC Department.

Participants discussed resource efficiency, the principles of the circular economy, in particular the principle of «zero waste», and prospects for their adaptation in Ukraine.

2.6. Are there transparent links to the selected goals from SDGs in the learning outcomes for the study programme? (Please add examples of good practices).

The following educational programs have programmatic learning outcomes that are clearly linked to the Sustainable Development Goals (Goal 7. Affordable and clean energy; Goal 13. Mitigation of the consequences of climate change; Goal 15. Protection of terrestrial ecosystems) (<https://lpnu.ua/osvita/pro-osvitni-programy>):

“Ecology and environmental protection” There are such program learning outcomes as "Be able to assess the potential impact of man-made facilities and economic activities on the environment", "Assess environmental risks in conditions of insufficient information and conflicting requirements";

“Energy systems for sustainable development (Renewable energy and E-mobility)” There are such program learning outcomes as "Ability to recognize the need for lifelong learning in order to deepen the acquired and acquire new professional knowledge", "Ability to demonstrate understanding of the basic principles of occupational health and safety and their application";

“Energy security” There are such program learning outcomes as "Critically analyze the main indicators of the functioning of energy systems at different levels from the perspective of energy security", "Ability to demonstrate knowledge of the current state, development trends, the most important developments and the latest technologies in the field of energy security at the national and global levels, and critically evaluate them".

2.7. Can students in any engineering degree program take elective courses related to green transition?

List of "green" disciplines for students of all specialties among the elective disciplines of the general training cycle - **Catalog of elective disciplines** (https://directory.lpnu.ua/selective_subjects):

- Fundamentals of ecology and life safety
- Open science in ecology
- EU energy and new trends for Ukraine
- Non-traditional and renewable sources of electricity
- Accumulation of energy
- Management of radioactive waste

2.8. If you and your colleagues were just starting to develop the activities under review, what would you do differently?

An integrated approach to the development and promotion of new educational programs in cooperation with stakeholders, in particular, specialized industrial associations, is recommended (participation in the development of the educational program, teaching of individual modules or topics, development of dual education, creation of joint training laboratories, access to technologies and equipment at work and industrial practices, promotion of the educational program in the labor market, employment).

Table 2.1. Brief evaluative summary of the green transition-related program(s) or offerings of your university; e.g., the strengths, accomplishments, limitations, and work in progress.

Department/ Unit	Green transition-related program(s)	Topical Target / Learning Objective	URL or location of supporting documents
<i>Department/ Unit Title</i> Institute of Power Engineering and Control Systems	1. Degree Program Titles 1 <i>Title</i> <i>Energy systems for sustainable development (renewable energy and electric mobility)</i>	To provide theoretical knowledge and practical skills and abilities sufficient for the successful performance of professional duties in the field of renewable energy, production of electrical energy from alternative energy sources, electric transport, in particular, full and hybrid electric vehicles, as well as energy-saving technologies.	https://directory2023.lpnu.ua/majors
	2. Concentrations and Elective Options related to green transition issues	Focusing on SDG Goal 7 - Affordable and clean energy Students can choose from two elective blocks for specialization: <ul style="list-style-type: none"> • Renewable Energetics • E-mobility 	https://lpnu.ua/sites/default/files/2021/program/17152/op-sistemi-energetiki-stalogo-rozvitku-2020-1.pdf
	3. Green transition activities in the Curriculum	Objects of study and activity: sources of renewable energy, physical processes of energy conversion, systems for generating electricity from renewable sources, the impact of renewable energy on power grids, systems for accumulating electricity, types and features of electric vehicles, types and features of autonomous energy sources	https://lpnu.ua/sites/default/files/2021/program/17152/op-sistemi-energetiki-stalogo-rozvitku-2020-1.pdf

		for electric vehicles, electrical equipment, and control systems in electric transport, systems for integrating renewable energy and electric transport.	
	4. Student Involvement (Non-curricular activity) in green transition activities	The students, who were members of the scientific club, participated, including with remuneration, in the research and development of the entire electrical system for a small electric truck as part of the economic contractual topic 556 with the firm “Stryy-Auto”.	The contractual documentation is available in the research department of Lviv Polytechnic National University
<i>Department/ Unit Title</i> Viacheslav Chornovil Institute of Sustainable Development	1. Degree Program Titles 2 Title Ecology	Learning objective: to develop a set of knowledge, skills, and abilities for use in professional activities in the field of ecology, environmental protection, and sustainable use of natural resources.	https://directory2023.lpnu.ua/majors
	2. Concentrations and Elective Options related to green transition issues	Focus on SDG target 15 - Protect terrestrial ecosystems Students can choose from two elective blocks for specialization: <ul style="list-style-type: none"> • Ecology and environmental protection • Environmental control and auditing 	https://lpnu.ua/sites/default/files/2021/program/12809/opp101bak2021.pdf
	3. Green transition activities in the Curriculum	Subject: structure and functional components of ecosystems of different levels and origins; anthropogenic impact on the environment and optimization of nature management.	https://lpnu.ua/sites/default/files/2021/program/12809/opp101bak2021.pdf

	4. Student Involvement (Non-curricular activity) in green transition activities	Under the Erasmus+ CLIMAN project «Synergy of educational, scientific, management and industrial components for climate management and climate change prevention» (project code – 619119-EPP-1–2020–1-NL-EPPKA2-CBHE-JP)	The International Summer School «Technological and Economical Aspects of Climate Change Adaptation Strategy» (https://lpnu.ua/en/news/university-runs-international-summer-school-technological-and-economical-aspects-climate)
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Table 2.2 Self-Ratings in the Green Education

OBJECTIVES	INDICATORS	<u>RATING</u> Evidence of Institutional/ Faculty recognition & action	<u>URL or location of supporting documents</u> (e.g., strategic and organizational plans, meeting agendas or minutes, white papers, mission & policy statements, etc.)
		0 = No 1 = Minimal 2 = Weak 3 = Adequate 4 = Strong 5 = Very strong	
The University has policies/procedures for	Institutional documents and/or faculty/department/study unit level documents	4	Environmental policy of Lviv Polytechnic National University

<p>considering sustainable development goals in the design and development of the offered study programs</p>	<p>presented on their websites clearly show that green strategies influence the planning, implementation and development of study programs</p>		<p>(https://lpnu.ua/en/environmental-policy)</p>
<p>The university offers extracurricular green transition courses</p>	<p>The university offers a university-wide list/catalogue of courses (microcredits) with topics corresponding to the green transition</p>	<p>5</p>	<p>A university-wide list/catalogue elective disciplines https://directory2023.lpnu.ua/en/selective-subjects-directory</p> <p>Microcredetials:</p> <p>Project NAWA, Wrocław University of Technology: Microcredentials courses “Renewable Energy”, “Green and Smart Transport” https://lpnu.ua/news/lvivska-politekhnika-bere-aktyvnu-uchast-u-prohrami-zelenoi-transformatsii-ukrainskykh)</p> <p>ERASMUS+ Projects</p> <ul style="list-style-type: none"> • Sustainable Development via Digital Economics as Ukrainian Education Paradigm: EU Experience Implementation (https://lpnu.ua/en/sustain)

		<ul style="list-style-type: none"> • EU Global Responsible Leadership: Climate Change, Environmental Protection And Humanitarian Aid (https://lpnu.ua/en/eu-lead) (https://lpnu.ua/en/news/lviv-polytechnic-runs-lets-go-eulead-within-erasmus-days-2023) • Dissemination of EU practices through e-marketing, conscious consumption, circular economy, resource efficiency (https://lpnu.ua/en/e-marketing) • Green School within the project «E-marketing» Jean Monnet Modules Erasmus+ (https://lpnu.ua/en/news/green-school-within-project-e-marketing-jean-monnet-modules-erasmus) • «Earth Day-2023» event was held within the project E-marketing Jean Monnet Modules Erasmus+ (https://lpnu.ua/en/news/earth-day-2023-event-was-held-within-project-e-marketing-jean-monnet-modules-erasmus)
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		<ul style="list-style-type: none"> • Synergy of educational, scientific, management and industrial components for climate management and climate change prevention (https://lpnu.ua/en/climan) <p>The Summer School Technological and Economical Aspects of Climate Change Adaptation will be held at the University (https://lpnu.ua/en/news/summer-school-technological-and-economical-aspects-climate-change-adaptation-will-be-held)</p> <p>The International Summer School «Technological and Economical Aspects of Climate Change Adaptation Strategy» (https://lpnu.ua/en/news/university-runs-international-summer-school-technological-and-economical-aspects-climate)</p> <p>Double Diploma Degree</p> <p>The Institute of Sustainable Development has launched a double diploma program with Warsaw School of Management</p>
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			https://lpnu.ua/en/news/isd-launched-double-diploma-program-warsaw-school-management)
Students and teachers are involved in the promotion of green transformation policies	Availability of facts/documents/events confirming the participation of students and teachers in green transition activities	4	<p>Eco-weekend in Lviv Polytechnic: University hosted an ecological feast (annually on August since 2018) (https://lpnu.ua/en/news/eco-weekend-lviv-polytechnic)</p> <p>The forum «Energy efficiency in cities» https://lpnu.ua/en/news/forum-energy-efficiency-cities-was-held-lviv-polytechnic</p> <p>Event “Circular Monday” (plan 20.11.2023)</p>
The University cooperates with stakeholders in the formation of green transformation policies in educational activities	Availability of facts/documents/agreed decisions confirming consideration of requests/suggestions of students, alumni and employers regarding the green transition in the content of study programs and curricula	5	<p>IEM hosted an open lecture within the Erasmus+ Jean Monnet module Circle (https://lpnu.ua/en/news/iem-hosted-open-lecture-within-erasmus-circle)</p> <p>Meeting with representatives of the Emerson Electric company, which is a stakeholder in the educational program "Energy Systems of Sustainable Development"</p>

			<p>https://lpnu.ua/news/vidbulasia-zustrich-z-vypusknymy-kafedry-eks-iaki-pratsiuiut-u-kompanii-emerson-electric</p> <p>An open lecture on Resource Efficiency and presentation of the Povtor project took place at the FTC Department (https://lpnu.ua/en/news/open-lecture-resource-efficiency-took-place-ftc-department)</p>
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Part 3. Green Campus

3.1 Campus description (university location (city center / rural / etc.), climate zone, total campus area, campus ground floor area of buildings, area on campus covered in vegetation, infrastructure solutions)

Lviv Polytechnic National University is located on a land area of 706017 m². It is infrastructurally composed of:

- ✓ The educational sector consists of 38 buildings in Lviv, two in Drohobych, Lviv region, and an educational building in Volodymyr-Volynskiy, Volyn region.
- ✓ The residential sector consists of 18 dormitories located in Lviv and 1 dormitory in Volodymyr-Volynskiy, Volyn region.
- ✓ The Educational and Scientific Geodetic Training Ground is located in Berezhany, Ternopil region
- ✓ The Educational and Scientific Geodesic Station is located 8 km from the town of Shatsk, Volyn region.
- ✓ The Polytechnic-1 Recreational Camp is located in Alushta, the Autonomous Republic of Crimea.
- ✓ The Polytechnic-2 Recreational Camp is located in Slavske village, Lviv region.
- ✓ The Polytechnic-3 Recreational Camp is located in the village of Koblevo, Mykolayiv district, Odesa region.
- ✓ The Polytechnic-4 Recreational Camp is located in Zozuli village, Zolochiv district, Lviv region
- ✓ The Polytechnic-5 Recreational Camp is located in the village of Hriada, Shatsk district, Volyn region.

All the buildings of the educational and residential sectors, the educational and scientific geodesic training ground, the Polytechnic-1__Recreational Camp, and the Polytechnic-2 Recreational Camp are located in the city.

The Polytechnic-3 Recreational Camp, the Polytechnic-4 Recreational Camp, the Polytechnic-5 Recreational Camp, and the Educational and Scientific Geodesic Station in Shatsk district are located in rural areas.

The Polytechnic-1 Recreational Camp and the Polytechnic-3 Recreational Camp are located on the Black Sea coast.

The Polytechnic-2 Recreational Camp is located in the picturesque Carpathian Mountains.

The Polytechnic-5 Recreational Camp and the Educational and Scientific Geodesic Station Shatsk district are located in a forested area on the shores of Lakes Svityaz and PISOCHNE in the Shatsk National Reserve.

The Polytechnic-4 Recreational Camp is located in a forested area near Zolochiv.

The total area of the university buildings is 380635.38 thousand m².

The University's Academic activities are carried out in Lviv at six main locations, as well as in educational buildings in Volodymyr-Volynskiy and Drohobych, and the Educational and

Scientific Geodesic Station Berezhany. The area of land on which they are located is 219629 m².

The total area of the ground floors of all academic buildings in Lviv and other above-mentioned locations is 44969,4 m².

The ratio of open space to total area is 79.5%.

Forest vegetation covers the territory of the educational and scientific geodetic station in Shatsk, as well as educational buildings No. 21 and No. 22 located on the territory of Stryiskyi Park in Lviv. Thus, the total area of the territories covered with forest vegetation and related to the educational process is 12986 m², which corresponds to 5.8% of the total area. The area of the campus covered by planted vegetation (including lawns, gardens, green roofs, internal plantings, and vertical gardens; excluding forest vegetation) is 26.2% of the total area. At the same time, the area capable of water absorption, excluding the area covered by forest and planted vegetation, is 22.02%.

3.2 Campus Water Management Facilities

The university's water conservation program reduces water consumption by implementing remote monitoring of water consumption by dormitories and academic buildings to detect unproductive losses (leaking sanitary appliances) at night. As a result of the negotiations, the most cost-effective proposal for the implementation of remote monitoring of water consumption by dormitories and academic buildings was selected.

The water reuse program is currently developing feasibility studies.

The program of using water-saving devices provides for the installation of taps with photocells in dormitories on university buildings during the implementation of the energy-saving project "Higher Education of Ukraine". These measures are included in the results of the energy audit. At this stage, tender procedures were held to procure design services.

The university has a permit to discharge wastewater into the municipal sewerage system of Lviv. Wastewater quality control is carried out 4 times a year according to the contract. According to the results of the wastewater quality studies, the content of harmful substances has not exceeded the permissible standards over the past five years.



The water purification system of building No. 4 of the Polytechnic-2 Recreational Camp



The water purification system of the Polytechnic-3 Recreational Camp



The water purification system of building No. 1 of the Polytechnic-2 Recreational Camp

The university uses water purification systems in the Polytechnic-2 Recreational Camp and the Polytechnic-3 Recreational Camp. The ratio of purified water use to total consumption is 2.58%. The university ensures regular checks of the quality of drinking water in the camps.

The university also plans to overhaul the purification facilities at the Polytechnic-4 Recreational Camp and the Training Ground in Berezhany.

3.3 Energy and Climate Change Policies on Campus

The university pays great attention to replacing the existing lighting with LED lighting, incandescent lamps are no longer purchased. Lighting devices are replaced during operation and major repairs of premises exclusively with LED lighting.

Considerable attention is also paid to replacing old gas boilers with an efficiency of 75-80% with new gas boilers with an efficiency of more than 92%.

The assembly hall of the main university building and the reading room of the student library are heated and cooled by heat pumps with heat recovery units. Hot water is prepared in the educational and recreational camp "Polytechnic-3" and on the 3rd floor of the student catering facility using air-to-water heat pumps. The old air conditioners are replaced with new inverter air conditioners as the old ones fail. Some examples of energy-efficient appliances are given below.



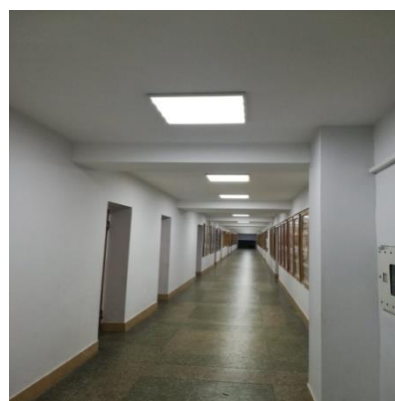
Boiler room
(educational building No. 33, Lviv)



Boiler room
(educational building No. 21, Lviv)



Heat pump with recuperator
(main building, Lviv)



LED lighting
(educational building No. 4, Lviv)



Boiler room
(educational building No. 7, Lviv)



LED lighting
(main building, Lviv)

The heat carrier is distributed in the buildings of academic buildings using modern individual heat stations with weather control of the heat carrier temperature. Currently, 27 individual heat points are already operating at the university. Individual heat points of dormitories and academic buildings are dispatched using a remote monitoring and control system that allows remote reading of heat meters, creating archives of heat consumption, and changing the settings of individual heat points. Data is transferred between the individual heating stations and the central computer via GPRS communication.

18 buildings of the university out of 64 heated ones are equipped with new modern two-pipe heating systems with steel panel radiators and manual or automatic balancing valves, which is 28% (including the Polytechnic-2 Recreational Camp - 5 buildings, the Polytechnic-4 Recreational Camp - 3 buildings, The Educational and Scientific Geodetic Training Ground in Berezhany - 1 building, educational buildings - 6, dormitories - 2 buildings).

Today, the university is actively using a real-time heat supply dispatching and control system, fire and burglar alarms, video surveillance, and high-efficiency LED lighting, but they are not united by a single building management system.

The university has already implemented several energy devices and systems that use renewable energy.

For example, renewable energy sources are being actively implemented in the Polytechnic-3 Recreational Camp, namely:

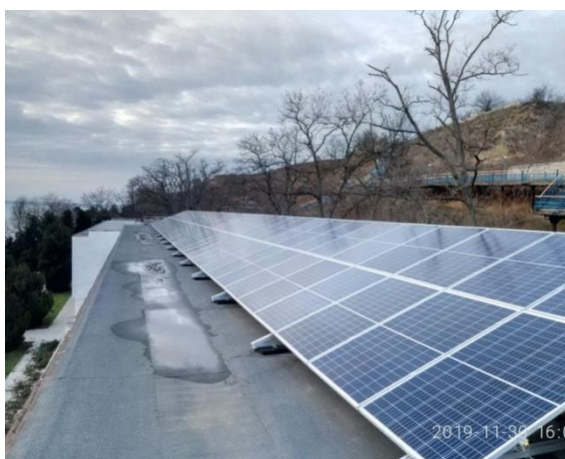
1. 1. A solar solar system with a capacity of 77 kW is installed in the sleeping building No. 10.
2. An air-to-water heat pump with a capacity of 16 kWh is installed in a dormitory building with 24 beds. It simultaneously serves the one-story and two-story cottages.
3. To prepare water for the canteen of the Polytechnic-2 training and recreation camp, five thermosyphon-type heat collectors with a capacity of 63 kW/day and two air-to-water heat pumps with a total capacity of 46 kW/hour were installed.
4. A solar power plant with a capacity of 40 kWh has also been installed in the Polytechnic-2 Recreational Camp.



The heat pump
(dining room, the Polytechnic-2
Recreational Camp, Ukraine)



Solar helio system
(dining room, the Polytechnic-2
Recreational Camp, Ukraine)



Solar electric panels
(building No. 10, the Polytechnic-2
Recreational Camp, Ukraine)



Solar electric panels
(building No. 9, the Polytechnic-2
Recreational Camp, Ukraine)

In addition, a laboratory installation of a 6.4 kW solar power plant was installed in the educational building No. 5. This power plant is used for student training and research; it is directly connected to the building's power grid and partially provides its power supply.

In general, further phased implementation of energy-saving measures, such as the replacement of boiler houses, individual heating stations, heating systems, insulation of building exteriors, and replacement of lighting, will allow the university to significantly reduce energy consumption in the future.

The university's construction and renovation policy is aimed at improving the energy efficiency of buildings and reducing energy consumption. Currently, the university has an active policy of replacing existing windows with energy-efficient metal-plastic ones. The heating systems of the buildings use modern automatic balancing valves from leading European manufacturers, such as Danfoss and others. The heat inlets of the buildings are equipped with modern individual heat substations (IHS) with weather-dependent automation, which ensures the maintenance of microclimate parameters in the buildings depending on the outside temperature, as well as the supply of hot water at the appropriate temperature

according to a pre-set schedule. The IHS is controlled remotely using a modern dispatching system that allows for remote monitoring and control of building heating parameters. The use of such a dispatching system allows for optimization of energy consumption through operational monitoring and control. The university also pursues an active policy of replacing old gas boilers with low efficiency with modern high-efficiency gas boilers with an efficiency of more than 92%. This allows for significantly reduced gas consumption and increases the level of safety of gas equipment operation. Significant attention is paid to the insulation of building envelopes.

Reducing electricity consumption is being addressed by replacing the existing lighting with modern energy-efficient LED lighting on a large scale.

Renewable energy sources are being actively implemented in the Polytechnic-3 Recreational Camp.

Lviv Polytechnic National University is a participant in the energy-saving project "Higher Education of Ukraine", which provides for the thermal modernization of 22 university buildings, including insulation of the external shells of buildings, replacement of heating, ventilation, and hot water supply systems with modern energy-efficient ones.

Lviv Polytechnic National University aims to make further energy savings by paying great attention to energy management.

3.4 Waste management on campus

Lviv Polytechnic National University has a waste recycling program. The university is also a member of the Clean City program. The university sorts waste into glass, plastic, paper, mixed waste, and batteries. At present, the Rector's order created the PolitechEko working group to organize waste sorting. The working group's functions include implementing a training program with students and staff on the correct waste sorting. The materials of the working group are available on the university website at <https://lpnu.ua/politecheko> and on Facebook here: <https://www.facebook.com/groups/2215182245475435> The university's academic buildings and dormitories have special containers for waste sorting, and there are also container sites for outdoor waste collection. In addition to paper, glass, plastic, and mixed waste, special boxes for collecting used batteries are installed in academic buildings and dormitories.



Paper containers for waste sorting



Garbage container area near the 13th building

The current conditions that encourage students and staff to sort waste are the availability of infrastructure, appropriate information support, and the promotion of waste sorting at the university level.

The university's paper reduction program involves reusing paper.

The university's program for managing organic waste from canteens involves contracting it out to farms to feed animals.

The university's inorganic waste management program provides for:

- ✓ Removal of solid waste from the university's container sites under contract;
- ✓ Contractual recycling of paper and plastic, glass, and scrap metal;
- ✓ Contracted recycling of lubricants and used car tires.

The university's toxic waste management program provides for:

- ✓ Contracted recycling of mercury lamps, oils, used car tires, and used batteries;
- ✓ Contractual disposal of laboratory test products.



Warehouse for the disposal of mercury lamps



Tanks for the disposal of toxic waste

The university also regularly collects and recycles ferrous and non-ferrous scrap metal.

3.5 Campus transport policy

The total area of parking lots at the university is 1789.7 m². The ratio of surface parking lots to the total campus area is 0.74%.

The university actively uses 12 company cars every day.

Private cars equipped with "zero-emission engines" and bicycles enter the university every day.

Every day, 128 private cars enter the university, excluding university vehicles, 12 zero-emission vehicles, and 8 bicycles.

To reduce the number of private vehicles, entry was restricted by introducing a permit regime, and parking spaces for private bicycles were provided.



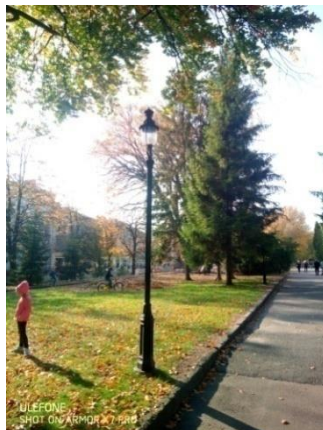
A barrier at the entrance to the university

The university does not own any shuttle buses. There may be shuttle buses on the territory of the university that serve conferences and other group trips for university employees. The number of shuttle buses that serve conferences and other group trips of university employees is 1-2 buses every 5-10 days, i.e. the load per day is 0.25 buses/day. The average number of passengers in each shuttle bus is 60 people.

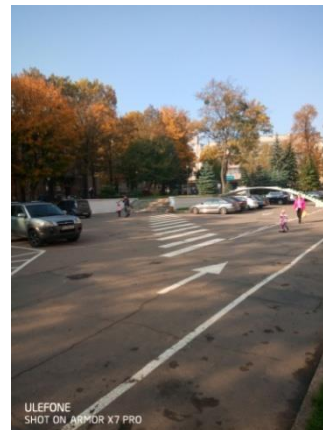
The approximate daily travel distance for vehicles within the campus alone is 5 km.

Pedestrian policy on campus:

- ✓ Ramps for people with disabilities have been installed;
- ✓ There are parking spaces for people with a physical disability;
- ✓ The territory is illuminated;
- ✓ Pedestrian paths have been arranged.



Illumination of the territory of the main building at 12 S. Bandera Street



Road markings on the territory of the main building at 12 S. Bandera Street



Parking spaces for people with disabilities near the educational building №1 at 2/4 Karpinskoho Street



Ramp and bicycle parking near the educational building №1 at 2/4 Karpinskoho Street

Places near the university are very well served by public transport.

3.6 Health infrastructure facilities (medical care, sports facilities, healthy eating)

There are first aid stations in the university's academic buildings and dormitories. A polyclinic monitors the health of students and teachers. Following the requirements of occupational health and safety standards, teachers and students undergo annual medical examinations. The 10th City Hospital is used to treat students and teachers of the University. The polyclinic and hospital are located in a building owned by the university at 14 Boy-Zhelenskyi Street.



Entrance to the university's hospital and clinic

Lviv Polytechnic National University constantly operates the Sports Complex of Lviv Polytechnic National University, which takes care of physical culture and sports and is interested not only in the student's sporting achievements but, above all, in his or her physical development and health. Many generations of world-famous athletes have grown up within the walls of the Sports Complex of Lviv Polytechnic National University. Students of Lviv Polytechnic National University have defended the sporting honor of Ukraine, the region, and the university at the Olympic Games, World University Sports Forums, World Championships, European sports arenas, and on the national stage. The Sports Complex of Lviv Polytechnic

National University was created to promote the development of physical culture and sports at the university, to strengthen its high authority by achieving significant results in city, regional, and national competitions, and to form a healthy lifestyle for young people. It continues to introduce physical culture and sports as an integral part of the physical culture of society, aimed at improving health and developing the physical, moral, volitional, and intellectual abilities of a person for the harmonious formation of his or her personality.

The sports complex is located in Stryiskyi Park in buildings 21 and 22 at 14 U. Samchuk Street. It has a swimming pool and gymnasiums for basketball, volleyball, handball, football and futsal, tennis, chess, athletics, kettlebell lifting, judo-sambo, freestyle and Greco-Roman wrestling, sports aerobics, boxing, sports tourism, swimming and other sports. The most demanding athletes will be able to satisfy the following interest groups: artistic gymnastics, dance aerobics, hand-to-hand combat, shaping, karate, kickboxing, badminton, tennis, and other sports.



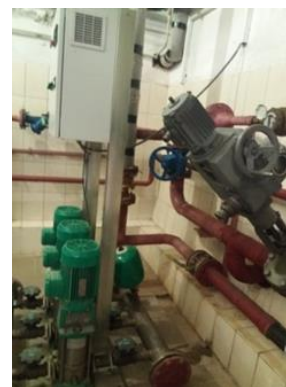
Educational buildings No. 21, 22

3.7 Security and Safety Facilities

The university's academic buildings and dormitories are equipped with an internal fire water supply system with fire extinguishing pumps, fire and burglar alarms, powder fire extinguishing systems, and internal and external video surveillance systems. All university facilities have fire extinguishers.



The fire shield of the 23rd building



Fire and household pumping station and electrically operated gate valve of the 21st building



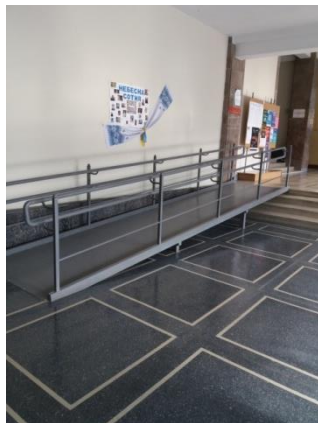
Security post of the main building (video surveillance, fire extinguishers, fire and security alarm panel)



External video surveillance of the 3rd building

3.8 Campus facilities for disabled people

Most of the university's academic buildings and dormitories are partially accessible and operated. They are equipped with means of unimpeded access to buildings for people with limited mobility (ramps, elevators, bathrooms).



Ramp in the premises of the 1st building



Bathroom for people with disabilities in the 1st building

To implement the right to higher education of persons with disabilities and chronic diseases the unit **“No Limits” Services of Accessibility to Learning Opportunities** (hereinafter – **“No Limits” Accessibility Services**) is operating at Lviv Polytechnic National University, within **International “Integration” Centre for Professional Partnerships** (hereinafter – **International “Integration” Centre**) in accordance with Order No. 43-12 of March 14, 2017, *“On the Establishment of “No Limits” Services of Accessibility to Learning Opportunities”*. <https://test-new.lpnu.ua/en/no-limits>

3.9 Green community development (NGOs, students engaging in sustainable projects, etc., all-university community pushing on green transition)

- For seven years, on the initiative of the Marketing Department, Lviv Polytechnic has been attracting students to Ecoweekend. This event has a significant impact, because it promotes a healthy lifestyle and a careful attitude to the environment.
<https://lpnu.ua/news/u-lvivskii-politekhniitsi-vidbudetsia-eko-vikend-iakyi-dast-zmohu-porushyty-naiaktualnishi>
- Participation in the city initiative "CLEAN CITY". Everyone will sort: Lviv Polytechnic began cooperation with the environmental initiative "Clean City".
<https://lpnu.ua/news/politekhnika-rozpochala-spivpratsiu-z-initsiatyvoiu-chyste-misto>

Table 3.1 Self-Ratings in the Green Campus

OBJECTIVES	INDICATORS	<u>RATING</u> Evidence of Institutional/ Faculty Recognition & action <hr/> 0 = No 1 = Minimal 2 = Weak 3 = Adequate 4 = Strong 5 = Very strong	<u>URL or location of supporting documents</u> (e.g., strategic and organizational plans, meeting agendas or minutes, white papers, mission & policy statements, etc.)
The university has a system of continuous/periodic monitoring of the degree/level of climate neutrality of activities carried out by the university as part of its campus activities	The university has programs, projects, activities, initiatives, and any other actions that provide for the assessment and/or measurement of climate neutrality, i.e. the achievement of a net zero emission of carbon dioxide and other greenhouse gases.	4	The University constantly keeps records of pollutant and greenhouse gas emissions from stationary sources and prepares annual reports. https://lpnu.ua/zvity-pro-vykydy-zabrudniuiuchykh-rechovyn-i-parnykovykh-haziv-v-atmosferne-povitriavid
	The university has committed to achieving carbon neutrality by a specified year.	0	
The entire academic community of the university is aware of the need to	The university has a practice of surveys (sociological research) of the academic community regarding the awareness of the feasibility of measures to achieve	5	Annual reports outlining the university's activities related to each of the 17 UN Sustainable Development Goals.

carry out activities directly on the university campus, directly or indirectly related to the selected goals from the list of SDGs.	the SDGs.		https://lpnu.ua/lvivska-politekhnika-i-stalyi-rozvytok
The university has internal procedures in place to monitor and control the sustainable use of available space on campus, an even (or similar) distribution of learning activities in the timetable, restricted access workspace versus open space on campus, well-balanced indicators of the level of use of classrooms for educational purposes.	The university has a practice of rational use of premises and/or open campus space for events.	5	The university has a practice of rational use of premises and/or open space on campus for events: <ul style="list-style-type: none"> - in the cold season, large events are held in the Assembly Hall of the 1st academic building - in the warm season, large events are held in the open air near the Main Building
The university has a program/plan to reduce the use of paper and plastic on campus.	The university has programs, projects, events, initiatives, and other actions to limit the use of paper and plastic on the university territory.	4	The University has a waste recycling program. The University is also a member of the Clean City program. The University sorts waste into glass, plastic, paper, mixed waste, and batteries. At present, the Rector's order created the PolitechEko working group to organize waste sorting. https://lpnu.ua/politecheko

	The university has an electronic document management system.	4	The university has an internal electronic document management system ALFRESCO (Inranet)
	The university has a paper reuse policy.	5	The University has a practice of collecting and recycling paper, including all reporting documents that are removed from the archives of the university and departments after the expiration of the specified storage period. No link
	The university has a practice of sorting paper and plastic waste.	4	The University introduced the practice of sorting and collecting paper, plastic, and batteries https://lpnu.ua/politecheko Eco-education of polytechnics: representatives of the directorates of the institutes received training on waste sorting from "PolytechEKO" https://lpnu.ua/news/ekovykhovannia-politechnikiv-predstavnyky-dyrektsii-instytutiv-proishly-treninh-iz-sortuvannia
The university has a water reduction/water conservation/water	The university has a water reuse policy (for lawn weeding, toilet flushing, vehicle washing, industrial use, etc.).	3	The University has developed a Water Conservation Program. No link

recycling program.	The university conducts measures on wastewater treatment.	4	The University has implemented a system of remote monitoring of water consumption in dormitories and educational buildings. No link
	The university conducts measures to systematically promote the idea of conscious water consumption.	1	Event Ecowekend https://lpnu.ua/en/news/shostyi-eko-vikend-u-lvivskii-politekhniitsi-vidbudetsia-v-onlain-formati
The university has energy-saving measures/programs on campus	Modernization projects of existing buildings to increase energy efficiency have been implemented on the campus	2	The University has already implemented several projects on thermal modernization of the entire building of educational buildings and dormitories. No link
	The university has policies, programs, projects, events, initiatives, and any other actions related to carbon management and carbon reduction (use of energy-efficient technologies, transition to greener energy sources, etc.)	3	The University systematically monitors emissions of pollutants and greenhouse gases into the atmosphere from stationary sources and prepares annual reports https://test-new.lpnu.ua/zvity-pro-vykydy-zabrudniuiuchykh-rechovyn-i-parnykovykh-haziv-v-atmosferne-povitria-vid
The university shall increase (at least maintain the existing level) the surface	The university has a policy or takes actions to preserve and/or increase the area of the campus area, which is land that absorbs rainwater (i.e., soil,	4	The University has entered the second phase of the project "Higher Education of Ukraine" aimed at improving the energy

<p>area of land, campus area covered with vegetation</p>	<p>grass, concrete block, synthetic field, etc.), covered by forest and planted vegetation (forest/urban park/garden, another area with trees/shrubs and shrubs/meadow and its biodiversity, natural or planted) or install walls and/or roofs covered with vegetation ("green" walls, internal gardens, "green" roofs, internal plantings in buildings, vertical gardens, etc.)</p>		<p>efficiency of universities and updating their scientific equipment with funds from the European Investment Bank (EIB). https://test-new.lpnu.ua/news/v-universyteti-pokrashchuvatymut-enerhoefektyvnist-v-ramkakh-proektu-z-yeib</p>
<p>The university is increasing the share of renewable energy used by the university in its daily activities.</p>	<p>The campus has a policy or take actions aimed at transitioning to greater use of renewable energy.</p>	<p>3</p>	<p>In 2019, the first stage of the solar power plant was opened at the Department of Electric Power Engineering and Control Systems. Now it has a capacity of 6.4 kW and is connected to the power grid of the 5th academic building. https://lpnu.ua/news/na-kafedri-esu-vidkryly-pershu-cherhu-soniachnoi-elektrostantsii</p>
<p>The university has created a safe and inclusive educational environment, in particular, based on the principles of universal design and smart adaptation.</p>	<p>The campus has security and safety equipment (video surveillance cameras, fire hydrants, emergency response buttons, etc.).</p>	<p>5</p>	<p>Educational buildings and dormitories of the university are equipped with security and fire alarm systems. No link</p>
	<p>The university has a policy of "green" construction of new buildings and renovation of existing buildings (natural ventilation, full natural daylight, availability of the building's energy manager, "green certificate" of the building, etc.).</p>	<p>3</p>	<p>The university has a construction and renovation policy aimed at increasing the energy efficiency of buildings and reducing energy consumption. No link</p>

	The university has infrastructural solutions for persons with special educational needs (ramps, elevators, lifts, etc.).	4	Most of the university's academic buildings and dormitories are equipped with means of unimpeded access to buildings for people with limited mobility. The university has a service of accessibility to learning opportunities "Without Limits" https://test-new.lpnu.ua/en/no-limits
The university supports and promotes a healthy lifestyle, including healthy eating	The university has projects, events, initiatives, and other actions to ensure sustainable food choices for everyone on campus, including vegetarian and vegan food.	1	"Public Health Week" at the Vyacheslav Chornovol Institute of Sustainable Development https://lpnu.ua/news/v-istr-imeni-viacheslava-chornovola-doluchyls-do-vidznachennia-tyzhnia-hromadskoho-zdorovia
	The university has a policy on the use of food products obtained as a result of ecologically safe use of land resources (agriculture).	0	
	The university has a health promotion program including hygiene, healthy eating, family planning, sports, and exercise.	3	Health Hackathon – a hybrid hackathon dedicated to health issues https://lpnu.ua/news/politekhnika-rozpochala-spivpratsiu-z-initsiatyvoiu-chyste-misto Lviv Polytechnic Health Day

			https://lpnu.ua/events/den-zdorovia-v-ramkakh-konferentsii-partnerstvo-zarady-sotsialnykh-zmin
	<p>The university has sports and medical infrastructure.</p>	<p>5</p>	<p>The university has a sports club with various sections for students and employees, vouchers to 5 university training and recreation camps are offered for health improvement and recreation, and a university polyclinic is constantly open</p> <p>https://lpnu.ua/en/university-sports-club https://lpnu.ua/navchalno-ozdorovchi-tabory https://lpnu.ua/en/system/404?destination=/&exception_statuscode=404</p>

Part 4 Overall Self-Essessment in the Green Transition Dimensions

Table 4.1 Self-Ratings in the Green Transition Dimensions

OBJECTIVES	INDICATORS	RATING	<u>URL or location of supporting documents</u> (e.g., strategic and organizational plans, meeting agendas or minutes, white papers, mission & policy statements, etc.)
		Evidence of Institutional/ Faculty recognition & action 0 = No 1 = Minimal 2 = Weak 3 = Adequate 4 = Strong 5 = Very strong	
The institution and its academic units recognize the contribution to green transition as an important or key element of institutional identity & general values	There is a stated commitment to contribute to green transition as a matter of institutional <u>identity</u> and <u>values</u> (<i>documented in mission statements, strategic goals, policy statements, development plans, annual reports, website content, etc.</i>)	2	Strategy for the internationalization of Lviv Polytechnic National University until 2025 <i>Mission of Internationalization:</i> <i>"...To create an environment in mutual exchange of knowledge through the mobility of students and academic staff</i>

			<p><i>for personal growth and sustainable development of the University...</i> (https://lpnu.ua/en/lviv-polytechnic/strategy-internationalization-2025)</p> <p>Environmental policy of Lviv Polytechnic National University:</p> <p>Policy statements (https://lpnu.ua/en/environmental-policy)</p>
	<p>The Institution (overall or at the unit level) has expressed a commitment to green transition by the creation of positions (Vice-Rector, Dean, Head of department etc.) and/or competent committees (a Council, Task Force, etc.), or by assigning responsibilities to existing personnel and/or governing bodies and committees.</p>	4	<p>Vice-Rector for Education and Strategic Development (https://lpnu.ua/lvivska-politekhnika-i-stalyi-rozvytok)</p> <p>Viacheslav Chornovil Institute of Sustainable Development, Director of the Institute (https://lpnu.ua/en/isd)</p>
	<p>The Institution (overall or at the unit level) has published criteria for hiring, tenure, and promotion that recognize faculty members' contributions to green transition through institutional formal or informal support</p>	1	<p>Eco-education of polytechnics: representatives of the directorates of the institutes received training on waste sorting from "PolytechEKO"</p>

			<p>https://lpnu.ua/news/ekovykhovannia-politehnikiv-predstavnyky-dyreksii-instytutiv-proishly-treninh-iz-sortuvannia</p>
	<p>The Institution has established multidisciplinary and interdisciplinary structures (such as an institute/center/unit) for research, education, and policy development on green transition</p>	<p>5</p>	<p>Educational laboratory on "Ecology" and "Fundamentals of Ecology" for students of all fields and forms of education. (https://lpnu.ua/en/esem/laboratories-department)</p> <p>The University has a Center for Professional Attestation and Certification, which carries out professional attestation of persons who intend to carry out energy efficiency certification and inspection of building engineering systems https://lpnu.ua/tsentr-profesiinoi-atestatsii-ta-sertyfikatsii</p> <p>The University is implementing the "Energy Efficiency in Communities II" project, which is being implemented by GIZ on behalf of the German government. As part of the project, free webinars are held for energy managers and representatives of local self-government bodies of cities in the Western region of Ukraine.</p>

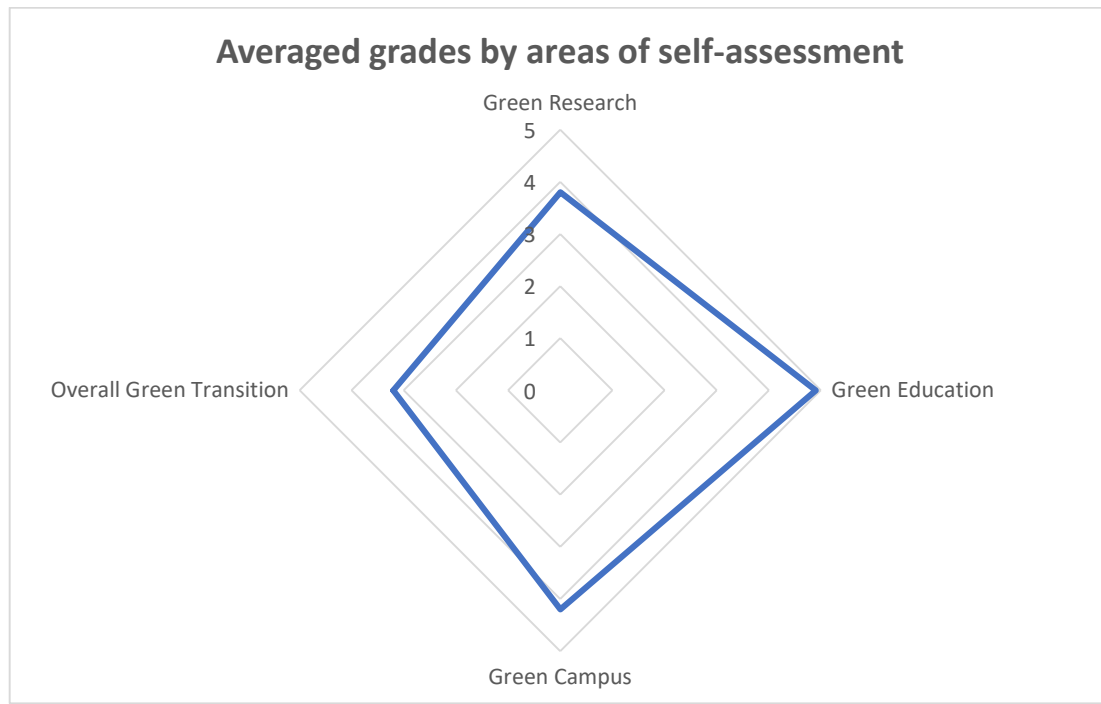
			https://lpnu.ua/proiekt-giz
Institutional management (overall or unit level) treats green transition as an integral part of the overall operational management strategy and practices	Institutional and/or unit-level documents clearly show that green strategies have an effect on the planning, implementation, and realization of operational objectives (short, middle, or long-term goals).	4	Environmental policy of Lviv Polytechnic National University. Policy statements (https://lpnu.ua/en/environmental-policy) Preparation of annual reports on sustainable development https://lpnu.ua/lvivska-politekhnika-i-stalyi-rozvytok
Specifically, the Institution (and/or its units) includes good practices for green transition		3	Event Ecowekend https://lpnu.ua/en/news/shostyi-eko-vekend-u-lvivskii-politekhniitsi-vidbudetsia-v-onlain-formati Eco-education of polytechnics: representatives of the directorates of the institutes received training on waste sorting from "PolytechEKO" https://lpnu.ua/news/ekovykhovannia-politehnikiv-predstavnyky-dyrektsii-institutiv-proishly-treninh-iz-sortuvannia
The Institution (and/or units) provides opportunities for faculty and staff development to		5	Study and development of the best European practices in the field of climate change prevention, adaptation and minimization of its consequences in the

<p>enhance understanding, teaching & research in green transition and sustainability</p>		<p>educational process and scientific research within the framework of an international project CLIMAN https://lpnu.ua/en/climan</p> <p>Lectures for students and teachers within the framework of the project on European studies for students of technical specialties of the University (EUSTS) https://lpnu.ua/en/events/andrii-andrusevychs-lecture-european-green-deal-opportunities-and-threats-ukraine https://lpnu.ua/en/news/analyst-andrii-andrusevych-gives-lecture-european-green-deal-polytechnicians https://lpnu.ua/news/predstavnyk-analitychnoho-tsentru-dixi-group-prochytav-dlia-studentiv-universytetu-lektsiiu https://lpnu.ua/en/events/public-lecture-new-european-bauhaus-energy-efficient-aesthetic-achieving-goals-european https://lpnu.ua/news/u-ramkakh-proiektu-eusts-vidbulasia-publiczna</p>
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			<p>lektsiia-na-temu-mizhnarodni-perehovory-z-pytan</p> <p>Winter School European best practices: energy, digital and environmental dimensions https://lpnu.ua/en/news/polytechnicians-organized-winter-school-european-best-practices-energy-digital-and</p> <p>The VII International Congress on Sustainable Development was held at the Lviv Polytechnic https://lpnu.ua/news/u-lvivskii-politekhniitsi-vidbuvsia-vii-mizhnarodnyi-konhres-zi-staloho-rozvytku</p> <p>1st Ukrainian-Polish Climate Forum «What can a person do to prevent climate change?» https://lpnu.ua/en/events/1st-ukrainian-polish-climate-forum-what-can-person-do-prevent-climate-change</p>
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Conclusion

The results of self-analysis are showed in the following diagram, in which each activities is assessed by the 5 points.



Average level of green transition in Lviv Polytechnic National University is **4.025**.

The Authority of University should concentrate on improving the following documents:

- to achieving carbon neutrality by a specified year;
- to conducts measures to systematically promote the idea of conscious water consumption;
- to ensure sustainable food choices for everyone on campus, including vegetarian and vegan food;
- to create a policy on the use of food products obtained because of ecologically safe use of land resources (agriculture);
- to create and to publishe criteria for hiring, tenure, and promotion that recognize faculty members' contributions to green transition through institutional formal or informal support.