

**НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ  
БІОРЕСУРСІВ І ПРИРОДОКОРИСТУВАННЯ УКРАЇНИ**

**НАВЧАЛЬНО-НАУКОВИЙ ІНСТИТУТ ЛІСОВОГО  
І САДОВО-ПАРКОВОГО ГОСПОДАРСТВА**

**ВП НУБІП УКРАЇНИ «БОЯРСЬКА ЛІСОВА ДОСЛІДНА СТАНЦІЯ»**

**ТОВАРИСТВО ЛІСІВНИКІВ УКРАЇНИ**

**НАУКОВО-ДОСЛІДНИЙ ІНСТИТУТ ЛІСІВНИЦТВА ТА ДЕКОРАТИВНОГО  
САДІВНИЦТВА**



## **ТЕЗИ ДОПОВІДЕЙ**

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**ASSESSMENT OF POTENTIALS FOR SUSTAINABLE USE  
OF FOREST BIOMASS FOR BIOENERGY PURPOSES  
IN UKRAINIAN CARPATHIANS**

*I. Lakyda<sup>1</sup>, Candidate of Agricultural Sciences,  
R. Vasylyshyn<sup>1</sup>, Doctor of Agricultural Sciences,  
A. Björnsen Gurung<sup>2</sup>, Doctor of Philosophy,  
J. Stillhard<sup>2</sup>, Technical Staff Member*

*<sup>1</sup>National University of Life and Environmental Sciences of Ukraine*

*<sup>2</sup>Swiss Federal Institute for Forest, Snow and Landscape Research WSL*

Forests are essential ecosystems in mountainous areas. As mountain systems are characterized by a high sensitivity to the impacts of climate change, steep topographies and remoteness, forest management in such regions needs to respond to both, the need for environmental conservation and for socio-economic development opportunities. The challenge of meeting these demands is apparent in the field of wood energy provision. To find a sustainable balance between environmental protection and resource use for bioenergy provision, a quantitative assessment of the energy potentials is a crucial prerequisite [1, 2].

The mountain forests of the Ukrainian Carpathians, being part of the Eastern European mid-latitude ecotone, represent a resource-rich forest management hotspot in an emerging economy. Given the low energy efficiency and growing national energy demands driven by the need for accelerated economic development, forests gain importance for timber production, but equally as a renewable energy source. In order to sustainably adjust forest management to changing needs and markets, reliable data on wood energy potentials and their distribution within the region is required.

This project aims at a quantitative assessment of five types of energy potentials of forest biomass in the Ukrainian Carpathians and builds on the expertise of the research partnership between the Swiss Federal Research Institute WSL and the National University of Life and Environmental Sciences of Ukraine, which is supported by the Swiss State Secretary for Education, Research and Innovation (SERI). The wood energy potentials will be presented in a spatially explicit form. Taking into account environmental, economic and social constraints on the use of wood energy, the study distinguishes between five types of energy potentials:

theoretically possible, technically accessible, environmentally safe, economically profitable and socially conditioned [2, 3]. The following activities are foreseen:

1. Elaborating the modeling support for the assessment of forest growth and productivity (including biological) considering the main forest-forming tree species of the Ukrainian Carpathians.
2. Refining definitions and assessment methods for wood energy potentials in forests.
3. Evaluating quantitative stand-level wood energy potentials in Ukrainian Carpathian forests.
4. Economic assessment of wood energy potentials at the stand level.
5. Elaborating approaches and methodologies for forecasting the dynamics of wood energy potentials depending on environmental changes.

Applying the above-mentioned methodological principles and approaches, we expect to assess the total volume of woody biomass in units of primary energy (J). We also plan to carry out an in-depth evaluation of these potentials at the stand level. This evaluation will provide an economic assessment of the sustainable energy potentials of these stands.

The results of the research can serve as a basis for a decision support system targeting at the implementation of adaptive and risk-resilient forest management in the Carpathian region of Ukraine. Further, this project can serve as a platform fostering interdisciplinary scientific collaboration of leading institutions of countries of the Mid-Latitude ecotone, even within IBFRA and IUFRO. Thereby, this activity will improve the quality of scientific support of forest management in mountainous regions and foster progressive policy-making at a local, regional and global scale.

Interim and final research results will be highlighted in scientific in peer-reviewed journals and in oral and poster presentations in Ukraine and abroad. Final results could also be published in a monograph and a series of brochures.

### References

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