Statistical Analysis of Youth's Attitude Towards the Post-War Development of "Green" Energy*

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Abstract. *The article analyses the attitude of youth towards developing renewable energy sources. This is especially important for Ukraine, which needs a rapid post-war restoration of the energy sector, adaptation to EU environmental standards, and youth involvement in building a "green" economy. The methodology is based on a questionnaire survey of students, which allowed them to assess their awareness of renewable energy, willingness to support the transition to clean energy sources and the main barriers. The results show a positive attitude of young people towards green energy but indicate significant challenges, particularly insufficient state support and high start-up costs. The study's practical significance lies in the possibility of using the results to improve mechanisms for stimulating young people to actively participate in developing renewable energy sources. The results may be helpful for governments, businesses, investors, and educational institutions interested in the effective post-war restoration of Ukraine's energy sector.*

Keywords: *green energy, renewable energy sources, youth, energy policy, investments.*
JEL Classification: *O13, Q20*

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1 Introduction

The modern world is actively switching to renewable energy sources (RES) because of environmental and economic factors. Ukraine has also begun the transition to green energy. Despite the numerous advantages of green energy, its implementation in Ukraine faces several barriers, including a lack of investment, imperfect legislative regulation and low public awareness. Ukraine's energy independence is becoming particularly relevant in times of war and the need to reduce dependence on fossil energy resources.

In this context, Ukrainian student youth, who are future specialists, play an important role. Young people will shape the country's energy policy in the future and implement innovative solutions. Researching their attitude to green energy will help identify potential ways of its development. The level of students' awareness and their attitude to RES is essential for developing effective mechanisms for popularizing green energy, creating educational programs and stimulating investments in this sector.

From a scientific point of view, the problem requires an interdisciplinary analysis, which includes research into the economic, social and political aspects of renewable energy development. The study's practical significance lies in the possibility of using its results to shape public policy, improve investment mechanisms and raise environmental awareness among the population.

2 Analysis of Recent Research and Publications

Renewable energy sources are a key direction in the development of global energy. Scientific works consider the advantages of RES (environmental safety, reduced dependence on energy imports) and the challenges (high cost of implementation, the need to change the infrastructure).

In article (Shkvarylyuk, 2024), Skvarylyuk defines green energy as a key strategy for reducing the negative environmental impact and transitioning to sustainable management. Despite the significant advantages, the transition to green energy is accompanied by several problems that require attention and systemic solutions. In another article, Skvarylyuk (Skvarylyuk, 2024) considers the theoretical aspects and organizational principles of renewable and green energy in the context of global transformational shifts and environmental challenges. The main advantages and challenges of implementing green energy in Ukraine are identified. In scientific work (Vilchynska, 2021), current trends in increasing electricity generation from alternative energy sources and solar power plants are emphasized. The article (Melekh, Nagirnyak, 2021) examines the legislative framework that regulates the renewable energy sector, the mechanism for setting tariffs, and the experience of leading countries. The work of Solidor (Solidor, 2020) presents the results of diagnostics of the renewable energy market, including social aspects and the attitude of young people to green energy. The work of Shpontak (Shpontak, 2020) analyzes the structure of the installed capacities of the country's energy system and determines the shares of electricity generation from traditional and non-traditional energy sources. Emphasis is placed on current trends in increasing electricity generation from alternative energy sources, particularly solar power plants. Sotnyk et al. (Sotnyk, 2019) assessed the results of the current development of the renewable energy sector in the world and Ukraine by solar, wind, hydro, geothermal, and bioenergy industries. Potapenko (Potapenko, 2012) examined the theoretical and methodological, institutional and legal principles of forming the state's economic security in the ecological transformation of the economy and the development of new "green" industries in Ukraine. Shtuler et al. (Shtuler, Ivanova, Beliakova, Hrytsyk, 2020) investigated the theoretical and methodological aspects of forming the paradigmatic foundations for developing renewable energy potential in Ukraine. Matveeva and (Matvieieva, Vakulenko, 2022) analyzed the problems and prospects of transitioning to a carbon-neutral economy in Ukraine. Also, they analyzed the Ukrainian realities regarding the use of motivational drivers of innovative activity in renewable energy.

Given the numerous studies of the prospects for the development of green energy in Ukraine, little attention has been paid to studies of the attitude of student youth to these issues.

The purpose of this article is to determine the level of awareness of students regarding the development of green energy, their willingness to support this development, and the main barriers they see on the way to the implementation of RES in Ukraine.

3 Presentation of the Primary Research Material

The study was conducted through a questionnaire (non-repeated) online survey of students from the first to fourth study years of the full-time department of the Academic and Research Institute of Business, Economics and Management of Sumy State University (Sumy, Ukraine). A total of 75 respondents were interviewed. The survey included the following key questions:

1. How familiar are you with "green" energy?
2. What do you think are the advantages of switching to RES?

3. What are Ukraine's most significant challenges in implementing "green" energy?

4. Under martial law, is investing in "green" energy worth?

5. Do you support the idea of Ukraine's complete transition to RES by 2050?

6. Are you ready to invest in the development of RES?

7. What type of renewable energy do you think has the most excellent prospects in Ukraine?

8. What can encourage students to support "green" energy development actively?

Let's analyze the survey results.

How familiar are you with "green" energy?

In the answers to the first question, 36% of respondents stated that they are very knowledgeable about "green" energy, while only 7% are unaware. The structure of the answers to the first question is presented in Figure 1.

What do you think are the advantages of switching to RES?

Among the key benefits, respondents noted:

• reducing environmental pollution – 32% of students;

• energy independence – 24% of students;

• lower energy costs in the long run – 31% of students;

• creation of new jobs – 13% of students.

The structure of the answers to the second question is presented in Figure 2.

What are Ukraine's most significant challenges in implementing "green" energy?

The biggest challenges, according to respondents, are:

• insufficient infrastructure – 22% of students;

• lack of necessary technologies – 17% of students;

• high initial costs – 21% of students;

• insufficient state support – 26% of students;

• lack of awareness of the population – 14% of students.

The structure of the answers to the third question is presented in Figure 3.

Under martial law, is investing in "green" energy worth?

When asked about the need to invest in "green" energy under martial law, respondents answered as follows:

• rather important – 33% of students;

• very important – 43% of students;

• neutral – 18% of students;

• it probably doesn't matter – 2% of students;

• doesn't matter – 4% of students.

The full results of the answer to the fourth question are presented in Figure 4.

Do you support the idea of Ukraine's complete transition to RES by 2050?

When asked about their support for the idea of a complete transition to renewable energy in Ukraine by 2050, respondents answered as follows:

• yes, I fully support it – 37% of students;

• I partially support it – 31% of students;

• I have no opinion – 29% of students;

• I do not support it – 3% of students.

The results of the answers to the fifth question are presented in Figure 5.

Are you ready to invest in the development of RES?

When asked about their willingness to invest in renewable energy, 49% of respondents answered

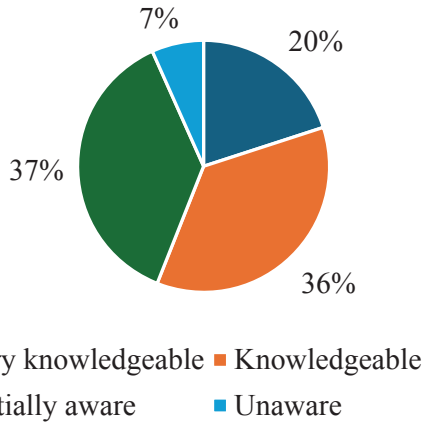

Figure 1 Structure of answers to the question "How familiar are you with "green" energy?"

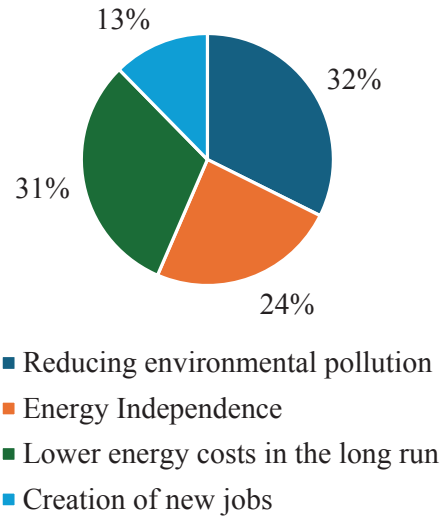

Figure 2 Structure of answers to the question "What do you think are the advantages of switching to RES?"

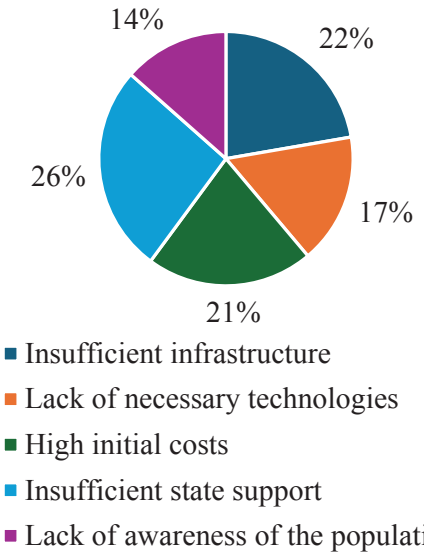

Figure 3 Structure of answers to the question "What are Ukraine's most significant challenges in implementing "green" energy?"

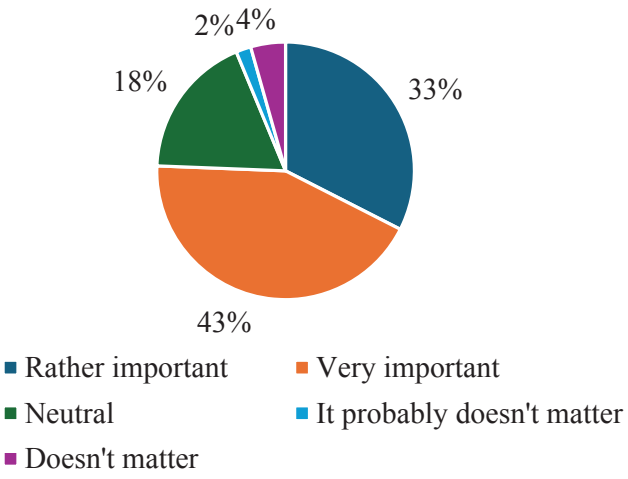

Figure 4 Structure of answers to the question "Under martial law, is investing in "green" energy worth?"

unequivocally in the affirmative, while 51% were ready only under certain conditions. The structure of responses to the sixth question is presented in Figure 6.

What type of renewable energy do you think has the most excellent prospects in Ukraine?

Respondents named the most promising areas:

- solar energy – 69% of students;
- wind energy – 17% of students;
- hydropower – 8% of students;
- biomass – 5% of students;
- geothermal energy – 1% of students.

The structure of the answers to the seventh question is presented in Figure 7.

What can encourage students to support "green" energy development actively?

When asked what might encourage students to support the development of "green" energy more actively, respondents answered as follows:

- educational programs – 18% of students;
- information campaigns – 21% of students;
- discounts for the installation of renewable energy sources – 32% of students;
- internship opportunities and participation in research projects – 29% of students.

The structure of the answers to the eighth question is presented in Figure 8.

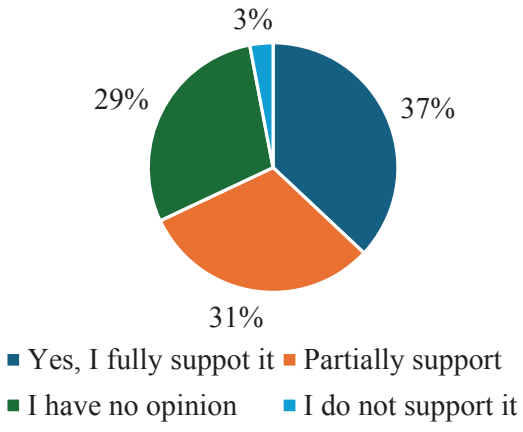

Figure 5 Structure of answers to the question "Do you support the idea of Ukraine's complete transition to RES by 2050?"

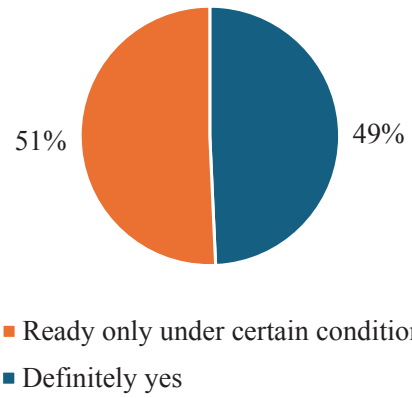

Figure 6 Structure of answers to the question "Are you ready to invest in the development of RES?"

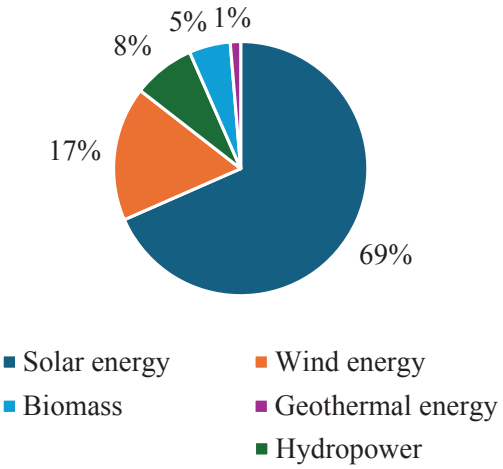

Figure 7 Structure of answers to the question "What type of renewable energy do you think has the most excellent prospects in Ukraine?"

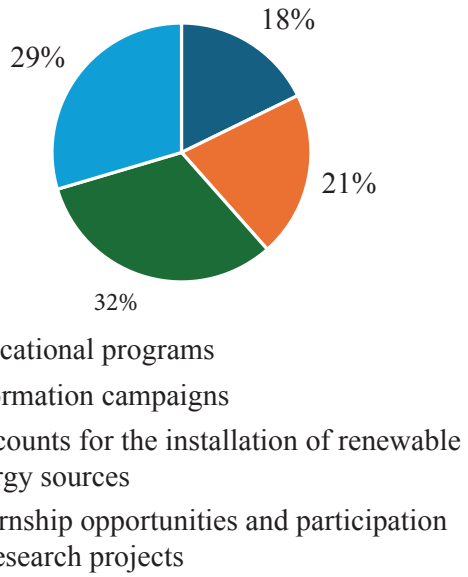

Figure 8 Structure of answers to the question "What can encourage students to support "green" energy development actively?"

The statistical research demonstrates that Ukraine's student youth are generally optimistic about transitioning to renewable energy sources (RES). The high level of awareness (36% of students are well acquainted with the concept of "green energy") indicates an active interest in this topic. In addition, most respondents (37%) fully support the idea of Ukraine's complete transition to RES by 2050, and another 31% support it partially.

An important indicator is that 49% of the surveyed students are ready to invest in developing RES personally, and another 51% expressed their readiness under certain conditions. This indicates a significant future potential for attracting private funds to the renewable energy sector. The main advantages of green energy are considered by young people to be reduced environmental pollution (32%), energy independence (24%) and reduced energy costs in the long term (31%).

At the same time, some barriers can hinder the development of RES in Ukraine. The biggest challenges, according to students, are insufficient government support (26%), lack of infrastructure (22%), and high initial costs (21%). To stimulate more active support among young people, important factors include educational programs (18%), information campaigns (21%), financial incentives such as discounts for installing RES (32%), internship opportunities and participation in research projects (29%). The results obtained can be used to improve the policy of supporting RES in Ukraine:

1. Raising awareness – developing state and university educational programs to popularise RES among young people.
2. Expanding financial support – implementing subsidy and preferential lending programs for young investors and startups in "green" energy.
3. Engaging students in practical projects – creating opportunities for internships in companies operating in the field of RES, as well as supporting research initiatives in this area.
4. Improving state regulation – ensuring a transparent tariff policy and guarantees for investors in RES.
5. Developing infrastructure – stimulating the construction and modernization of networks for the efficient use of energy from renewable sources.

The research that was conducted allowed us to test some hypotheses regarding the attitude of young students towards renewable energy. The hypothesis about the high awareness of young people regarding renewable energy is partially confirmed. Although 36% of respondents are well acquainted with "green" energy, a significant part of students have only basic knowledge or insufficient awareness, indicating the need for additional educational initiatives. The hypothesis about the positive attitude of young people towards the transition to renewable energy is confirmed. Most respondents support Ukraine's complete transition to renewable energy sources by 2050, indicating a general interest in developing this area. The hypothesis about the low willingness of students to invest in renewable energy is refuted.

Almost half of the respondents are ready to invest in the development of green energy, and another 51% – under certain conditions. This indicates a high level of potential involvement of young people in financing renewable energy.

In EU countries, awareness of green energy is part of the overall sustainable development strategy. The European Green Deal is a unifying element that increases the sustainability of society and the economy. It involves integrating green energy issues into educational programs, which helps to raise awareness among students (Yevropeiskyi Zelenyi Kurs, 2021). For example, within the European Solidarity Corps program's framework, young people can participate in volunteer projects related to environmental protection and the development of green energy. This helps to raise awareness and involve young people in ecological initiatives. Some EU countries are introducing financial mechanisms to stimulate youth participation in "green" energy. For example, a "net metering" system is used in Denmark, allowing consumers, including young people, to benefit from their renewable energy production (Zakiyanov D., 2019). Young people play a key role in the fight against climate change by actively participating in public movements and initiatives. Organizations such as UNICEF emphasize the importance of involving young people in environmental projects and discussions, providing them a platform to express their views and influence green energy policy (UNICEF, 2021).

Ukraine can use the EU's experience, for example, by integrating courses on renewable energy into the economic and technical specialities curricula. This will allow training specialists who can work effectively in green energy to understand its technical, economic and regulatory aspects. It is advisable for students of economic specialities to introduce disciplines highlighting economic models of financing projects in renewable energy, investment management, analysis of state support policies and regulatory regulation. At the same time, for technical specialities, it is essential to focus on the practical study of modern technologies in renewable energy. On the other hand, Ukraine already has the opportunity to receive grants from international EU programs, such as "EU4Energy", which support youth initiatives in "green" energy. The EU has a Young Innovators Programme, which provides funding and support to young innovators in the EU to implement their startups in green energy and sustainable technologies. Under the programme, students can get the opportunity to work on international projects and startups.

4 Conclusions

The results indicate that young students have a positive attitude towards developing "green" energy in Ukraine. At the same time, existing challenges (economic, political, technical) require further analysis and development of a strategy to overcome them.

Comparison with international studies shows that similar trends are observed in other countries. Still, the level of state support and the volume of investments are key in accelerating the transition to RES. The main conclusion is that most students support the development of green energy, but awareness of specific aspects of this issue needs to be improved; the main advantages of green energy, according to students, are environmental and economic benefits, but there are significant barriers to its implementation; state support, reducing the cost of technologies and educational initiatives can contribute to a more active transition to RES.

A promising direction for further research is the analysis of state support policies for "green" energy and developing mechanisms for attracting investments in RES.

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