

ENVISIONING THE ENERGY END-USER PROFILE IN THE CURRENT CONTEXT OF OVERLAPPING CRISES**Anamaria-Geanina MACOVEI***Stefan cel Mare University of Suceava, 720229, Romania
anamaria.macovei@usm.ro***Ioana ANDRIOAIA***Stefan cel Mare University of Suceava, 720229, Romania
ioana.andrioaia99@gmail.com***Abstract**

According to the European Parliament, the EU is facing a major energy crisis, triggered on one hand by a shortage of natural gas and on the other by the explosive rise in energy prices. Therefore, the aim of this paper is to identify end-user energy consumer requirements and views on energy from renewable energy sources (RES-E) and to analyze the factors influencing RES-E investment. To achieve the proposed aim, the following objectives have been formulated: Objective 1 - To review the literature on renewable energy investments; Objective 2 - To establish the implications of the Russian-Ukrainian conflict on the energy sector activity; Objective 3 - to assess the contribution of green certificates (GCs) in stimulating green energy production; Objective 4 - To identify the end-consumer perspective on the transition from conventional to renewable energy sources. The research methodology is based on the questionnaire method, which has been applied to a number of 107 individuals and 31 legal entities who were questioned on pressing issues, such as the current energy crisis and its perceived economic and social effects. The results of this research materialized in the construction of a final consumer profile (by category of consumer) of electricity from renewable sources. The importance of the results obtained is of real use to national governments, but also to other decision-makers in the energy industry, as the end-consumer profile can warn them of possible social, economic and political conflicts, depending on the dissatisfaction expressed.

Keywords: *energy; final consumer; political crisis; renewable energy; social and economic effects*

JEL Classification: M41

I. INTRODUCTION

The EU, and Romania in particular, are currently facing an unprecedented energy crisis, which calls for special and timely measures. According to EU statements, "this year, the price of natural gas has multiplied several times over, resulting in increasingly unaffordable energy bills for many domestic and industrial consumers in the Union, with energy poverty rising at an unprecedented rate, having disproportionate effects on Member States" (www.europarl.europa.eu). Although the Russian-Ukrainian war has amplified these effects, we note that before the invasion of Ukraine, wholesale gas prices were around 200% higher in February 2022, with a similar pattern being followed by wholesale electricity prices (<https://ec.europa.eu>). While initially the unjustifiably high energy prices were driven by increased global demand for gas to recover from the COVID-19 pandemic, later the political-military conflict between Ukraine and Russia aggravated the energy crisis. The escalation of conflicts with Russia, Europe's main supplier, will lead to bottlenecks in energy supply, which will eventually lead to exploding energy prices. No country in the world can ignore the fact that all areas of activity are primarily dependent on electricity, let alone the economy. National economies also continue to focus on the transition to green energy, which is becoming a necessity in view of the rising prices for mineral resources that are being consumed at a rapid pace, and the current Russian-Ukrainian conflict that is prompting governments to find new ways of supplying countries not only with electricity, but especially with fuel. In this context, the aim of this paper is to identify end-user energy consumer requirements and views on energy from renewable sources (E-SRE), and to analyze the factors influencing E-SRE investments. To achieve the proposed aim, the following objectives have been formulated: objective 1 - to review the literature on renewable energy investments; objective 2 - to establish the implications of the Russian-Ukrainian conflict on the energy sector activity; objective 3 - to assess the contribution of green certificates (GCs) in stimulating green energy production; objective 4 - to identify the end-consumer perspective on the transition from conventional to renewable energy sources. The results of the research are materialized in the construction of the final consumer profile, both of

the physical consumer and of the profile of the economic agents, users of electricity from renewable sources. The importance of the results obtained is of real use to national governments, but also to other decision-makers in the energy industry, as the end-consumer profile can warn them of possible social, economic and political conflicts, depending on the dissatisfaction of the consumer typology. Under these circumstances, the legislator has the possibility of helping to protect consumers, i.e. adopting short-term social and economic measures as a preventive measure to avoid the outbreak of social conflicts, or, as proposed by the EC, the governments of the Member States can use the additional revenue from emissions trading to reduce the pressure on domestic consumers.

II. LITERATURE REVIEW

Development and investment in renewable energy technologies has become a desirable goal for governments to achieve, which is why the renewable energy sector plays an important role in the economy and economic growth (Fatbardha, Uğur, & Hysa, 2021). Given the Russian-Ukrainian war, energy-dependent countries are now looking for solutions to avoid suffering from this unexpected conflict. Investment is conditioned on increasing energy savings and the cost of investment, the benefits of comfort and lower carbon emissions being less important. To increase energy efficiency, in addition to the support offered by the state in increasing the consumption of RES-E, the companies are encouraging consumers to become prosumers, which will not only help to generate new ideas but also to increase the number of investments in sustainable energy technologies (Constantin et al., 2019).

Another important issue, relevant for our objectives, which has raised many questions in literature, is the link between efficiency gains and policy implications in view of future energy transformation policy. There are also studies that highlight among the solutions proposed by the EU Green Paper the need for fiscal and financial incentives for research and development of renewable technology, better targeting of government funding and the formation and stabilization of markets for research results (www.ince.ro). Lack of fiscal harmonization and frequent changes only hinder the whole technological process. Analyzing the system of support of renewable energy through green certificates (GC) in Poland, has shown that there is a strong link between the applied GC system and the decisions of governmental and legislative institutions, which reduces the interest of investors in RES (Janusz & Graczyk, 2020). As a rule, in the energy sector, the role of risk management plans is definitely applicable to both private and public companies, especially governmental. In this regard, Rimšaitė (2019) turns her attention to the emergence of corruption and regulations against it in the energy sector. Specific characteristics of this sector reveal the instability of regulations that at some point turn into more or less direct obstacles for entrepreneurs. Corruption comes from both the public and the private sector, classified as "supply and demand side corruption". Anti-corruption programs need to be implemented from the highest levels of the hierarchy down to the employees (Rimšaitė, 2019).

On the other hand, Colgan (2013) explains the causes of the Russia-Ukraine war based on resource dependency theory and conceptual framework. The author's findings demonstrate that Russia is closely dependent on gas export revenues to Ukraine and the European Union, but also that Ukraine's energy fields and pipeline system have the potential to be a direct competitive threat to Russia's energy exports. The latest studies focus on the capacity to develop energy independence, particularly for countries affected by the Russian-Ukrainian conflict. Renewable energy analysts have recalculated their estimates, especially in the US, while in Europe the results are not very favorable, with investors expecting significant political support given the EU countries' heavy dependence on Russian oil and gas. In short, the speed of the transition to a low-carbon economy appears to be distinct between US and Europe.

Prices are rising due to a number of influencing factors including the COVID-19 pandemic, which has accelerated demand for resources after the resumption of activity, and the Russian-Ukrainian conflict, which had a major influence on oil and gas imports depend. The switch from conventional to renewable sources cannot be achieved suddenly. As well as investment in technology, adaptation is needed, both of which take time (Deng, et al., 2022). According to the latest studies, the main element in the transition to green energy is acceptance and support from end consumers. "In the major Western industrialized countries, renewables have, regardless of this expansion, a high degree of acceptance with approval ratings well above 80% in most cases." (www.unendlich-viel-energie.de). O. Bayulgen and S. Benegal (2019) used a survey to test the influence of economic frameworks on individuals' perception of RES-E. The results found that the end consumer is strongly influenced by the negative and less by the positive economic aspects of this transition, which is why economic frameworks are directly responsible for informing the population. A significant part of the literature highlights the lack of consumer information on the technologies that can be used in RES. For example, the use of the questionnaire method and the econometric analysis of the responses show that the level of knowledge held by respondents reaches a "neutral level of awareness of renewable resource use technologies among the population surveyed" (Constantin et al., 2019). The works mentioned in these paragraphs have contributed to the shaping of objectives 1 and 4.

For a more in-depth analysis of the end-users' demands for S-REG in the following we will conduct a meta-analysis of the literature, to outline the anatomy of the energy industry and end-users' desires in the last 3 years, more

precisely with the onset of the health crisis, followed by the energy and political crisis. Thus, Table 2 presents a relevant part of the studies that had a significant impact on our research and contributed to the conceptualization of the econometric model.

Table 1. Meta-analysis - final consumers and RES-E

Author (year)	Goal	Results	Impact
Constantin et al. (2019)	The aim of the paper is to identify and analyse the perception of Romanians on increasing energy efficiency in households and the willingness to use RES energy.	The results of the survey show that Romanians have invested in increasing energy efficiency in their households, the main improvements being energy savings through the purchase of economical household appliances or thermal insulation of the home.	A high importance given to economic factors aiming at purchasing E-RES based systems and a lower importance of environmental protection considerations.
Seetharaman (2019)	The objective of the research is to identify the impact of social, economic, technological and regulatory barriers to the implementation of E-SRE. The data was collected through an online questionnaire answered by 223 professionals working in the energy sector around the globe.	This research shows that social, technological and regulatory barriers have a strong influence on E-SRE implementation, while economic barriers indirectly influence it significantly.	High impact due to the identification of barriers hindering research and development of technologies and increasing the profitability of RES-E.
Laura Rimšaitė (2019)	The aim of the article is to analyze and assess the factors that determine corrupt actions in the energy sector and to reveal the relationships between competition law regulation and corruption regulation.	The results plan on corruption arising due to the specifics of the sector, such as resource location, policy and procurement.	Increased impact due to energy resources on everyday life and monopolistic companies resulting in high prices for consumers.
Renata Marks-Bielska et al. (2020)	The objectives of the research were to determine the importance of renewable energy (RES) in Poland's energy mix and to obtain society's opinion and level of knowledge on the use and development of non-conventional energy based on a questionnaire.	The research concluded that respondents approve of the development of RES in Poland. At the same time, they claim that the purchase and installation of devices for unconventional energy production are too expensive. Respondents encourage subsidies in RES investments and higher tax exemptions related to these investments.	High impact due to the importance of RES exploitation and investments in renewable technology.
Janusz Adamczyk and Magdalena Graczyk (2020)	The aim of the article was to analyze the support system for the development of RES energy production using the so-called "green" certificates of origin mechanism, which in Poland already has a 14-year tradition.	The results highlight the mismanagement of the VC system, especially in terms of governmental and legislative institutions. The feedback was examined with a long delay, which contributed to a decrease in entrepreneurs' interest in investing in SRE and even led to their bankruptcy.	The impact is high due to the correlation between the VC support scheme and E-SRE investments.
Nicolae Marinescu (2020)	The aim of the paper was to highlight the evolution of RES-E policy in Romania, to investigate the incentives and their effects and to critically assess the impact of the changes on RES-E producers through an exploratory study and several interviews with RES-E company executives.	The main finding was that the revision of the subsidy scheme and the ensuing changes in energy policy are major determinants of the declining financial performance of RES-E producers.	High impact to improve policy making in these challenging times faced by E-SRE producers.
Deng M et al. (2022)	The focus of the paper is to analyze the influence of renewable energy and economic growth from the two dimensions of natural resources and institutional environment, with resource dependence and anti-corruption regulations as the main variables.	The research results show that for all sampled countries, in the resource dependence and anti-corruption regulation model, there is a positive relationship between renewable energy and the economy.	High impact through the correlation established between energy efficiency and the institutional environment for energy transition.

Source: Own processing

From the analysis of the studies presented in the table above, we can see the results of the authors mentioned regarding the final consumer's perspective on the transition from conventional to renewable energy sources. Some authors point their attention to the lack of legislative regulations that do not encourage entrepreneurs and to the obstacles posed by taxation and corruption (Deng et al., 2022, Rimšaitė, 2019). Moreover, due to the pressures brought by the Russian-Ukrainian conflict the need for energy independence is increasingly sought by countries that were supported by Russian imports.

Authors such as Vainio et al., (2019) analyzed socio-economic aspects with the aim of projecting the image of Finnish citizens about the transition to sustainable energy. Analyzing Romanian end consumers, identifying and analyzing their opinions on energy efficiency improvements, the lack of information is highlighted not only from the economic but also from the academic point of view. For example, there are Romanian authors who propose to start information and promotion campaigns to contribute to raising awareness of the role of energy based on renewable resources for sustainable development (Constantin et al., 2019).

III. RESEARCH METHODOLOGY

This section of the paper describes the research methods used to construct the end-user energy consumer profile and views on energy from renewable sources (E-SRE) and to analyze the factors influencing investment in E-SRE. Our research is quantitative, based on the questionnaire method; the structure of the questionnaire, the number of respondents, the inclusion and exclusion criteria for responses can be viewed in Table 2.

Tabel 2. Grouping of variables

Database: Questionnaire on green certificates and their involvement in the current energy crisis		
Type of research: quantitative, based on questionnaire method		
Questionnaire structure: 20 multiple choice questions and 2 matrix questions		
Inclusion criteria;	natural persons: energy subscribers	legal persons: energy subscribers
Exclusion criteria	incomplete answers	incomplete answers
Results		
No exclusion criteria	107	31
With exclusion criteria	0	0
Date of data processing	Date of data processing 03.05.2022	
Processing of results	IBM SPSS Statistics, version 26	

Source: Own processing

The data collected from the questionnaire are interpreted and analyzed in the next section of the paper.

IV. RESULTS AND DISCUSSION

Views of individual end consumers on the energy transition (OCFPFT). For the analysis of the OCFPFT, the grouping of the questions in the questionnaire can be seen in Table 3:

Table 3. Grouping of dependent and independent variables

V - Consumer opinion on energy transition (OCFPFT) V6 - Level of education (I12)	V6 - Level of education(I12)
V1 - Age (I7) V7 - GC obligation (I16)	V7 - Obligation to pay GC (I16)
V2 - Gender (I8) V8 - RES-E investment and production (I18.4, I.18.5, I.18.6, I.18.7, I.18.9, I.18.12)	V8 - Investment and production of RES-E (I18.4, I.18.5, I.18.6, I.18.7, I.18.9, I.18.12)
V3 - Source environment (I9) V9 - GC contribution (I.18.10, I.18.11)	V9 - GC contribution (I.18.10, I.18.11)
V4 - Occupation (I10) V10 - Parties involved in the energy production and distribution process (I.19.1, I.19.2, I.19.3, I.19.4)	V10 - Parties involved in the energy production and distribution process (I.19.1, I.19.2, I.19.3, I.19.4)
V5 - Monthly income (I11) V11 - Crisis resolution (I22)	V11 - Crisis resolution (I22)

Source: Own processing

We aim to find a model that can help us to design the profile of the end-user electricity consumer who is an individual. We can see below the correlation calculated in SPSS between the dependent variable OCFPFT and the independent variables:

Table 4. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.566 ^a	0.320	0.241	0.31906	2.178
a. Predictors: (Constant), V11, V5, V7, V1, V2, V6, V3, V9, V4, V10, V8					
b. Dependent Variable: V					

Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

According to Table 4, we find that between the dependent variable OCFPFT and the independent variables V1-V11 there is an average correlation with a linkage of 0.566. Analyzing the determination ratio, we note that the variation of the independent variables influences the variation of the variable OCFPFT by 32%.

Table 5. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.022	0.268		7.557	0.000
	V1	0.003	0.040	0.008	0.087	0.931
	V2	0.234	0.075	0.282	3.125	0.002
	V3	0.090	0.069	0.124	1.314	0.192
	V4	-0.053	0.028	-0.181	-1.928	0.057
	V5	0.051	0.036	0.131	1.405	0.163
	V6	-0.105	0.026	-0.364	-3.987	0.000
	V7	0.091	0.066	0.124	1.378	0.171
	V8	0.032	0.065	0.081	0.490	0.625
	V9	-0.023	0.056	-0.066	-0.413	0.681
	V10	-0.009	0.044	-0.021	-0.197	0.844
	V11	0.036	0.031	0.110	1.152	0.252

a. Dependent Variable: V

Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

According to Table 4, the estimated equation of the multiple linear regression model can be determined for the analyzed data:

$$V = 2,022 + 0,003 \cdot V1 + 0,234 \cdot V2 + 0,090 \cdot V3 - 0,053 \cdot V4 + 0,051 \cdot V5 - 0,105 \cdot V6 + +0,091 \cdot V7 + 0,032 \cdot V8 - 0,023 \cdot V9 - 0,009 \cdot V10 + 0,036 \cdot V11 \quad (1)$$

According to ANOVA table, the econometric model is validated with a probability of 95% because the Sig. value is lower than the significance threshold of 0.05. According to Table 4, the largest influence on OCFPFT is the variable education level. Most respondents are people with secondary education, which indicates that they are not receptive to the transition to E-SRE, lack of information and lack of knowledge of the benefits being the main causes. A low level of education will negatively influence the perception of the final individual consumer towards OCFPFT. There is a strong association between the gender of the respondents and OCFPFT. The results of our research showed that female respondents are more open to accepting change, interested in a sustainable future and a green environment, a result contrary to that obtained by Vainio et al. (2019). The mismatch between the results of the two research is due to the fluctuation between the number of female and male respondents. Significant influences on the dependent variable OCFPF are also observed from the variable Occupation. Based on the obtained answers we deduce that occupation and level of education influence OCFPFT in the same way. More than 70% of the respondents are employees, with incomes between 2300 - 3400 lei. The increase of the respondents' income influences this transition in a positive way because individual consumers have the possibility to invest in the technology needed to capture RES-E or even to become prosumers (producers and consumers of RES-E at the same time), proposing ideas and supporting the investment environment. Although they are unhappy about the obligation to pay for GCs, end-users pay for these titles in their electricity bill every month. With this levy, the state supports RES-E producers, thus contributing to the transition to green energy and financing RES-E producers. The frequency of responses is the same for rural and urban respondents and influences their opinion positively. Analyzing the answers obtained from the questionnaire, in order to solve the current energy crisis directly influenced by the pandemic and geo-political crisis,

the main ideas motivating the respondents to support the transition are the investments of the Romanian State in hydropower, own thermal power plants and other sources, but also the use of renewable energy sources to reduce energy dependence. Investment and production of RES-E have a weak influence on OCFPFT. At the same time, most respondents attach importance to investment in RES-E, considering it essential to have legislation to support RES-E producers. The final consumers of energy, individuals, are interested in this transition, the only impediment associated with this change being the costs, which is why respondents encourage those investments coming from potential investors, especially external ones. The negative influence of stakeholders in the energy production and distribution process can be explained by the negative image created by public institutions and the energy business environment. The individuals interviewed consider the Romanian Government represented by the Ministry of Energy as the main culprit of the current energy crisis, and with the increase in energy prices, followed by the lack of state involvement, they have lost confidence in public institutions, considering that they will not be considerably involved in finding solutions to overcome the crisis. Age is the variable with the least positive influence on the OCFPFT. Most respondents are young people aged between 18 and 34. If this variable increases, acceptance of the need for energy transition and sustainable development changes in the same direction. The change is not significant, indicating a relatively low interest of respondents in RES-E.

Analyzing the profile of the final consumer of electricity, we can conclude that the OCFPFT is influenced by the lack of information of consumers and distrust of state institutions and the energy economic environment. Knowing the profile and the consumers' complaints, policy makers have a starting point in finding solutions to overcome the energy crisis.

Views of corporate end-users on the energy transition (OCFPJT)

For the analysis of the OCFPJT, the grouping of the questions in the questionnaire can be seen in Table 6:

Table 6. Grouping of dependent and independent variables

V - views of individual end-users on the energy transition (FPTPEC)	
V1 - Position held in the firm (I3) V6 - Obligation to pay GC (I16)	V6 - GC liability (I16)
V2 - Total assets (I4) V7 - RES-E investment and production (I18.4, I.18.5, I.18.6, I.18.7, I.18.9, I.18.12)	V7 - Investment and production of RES-E (I18.4, I.18.5, I.18.6, I.18.7, I.18.9, I.18.12)
V3 - Turnover (I5) V8 - GC contribution (I.18.10, I.18.11)	V8 - GC contribution (I.18.10, I.18.11)
V4 - Number of employees (I6) V9 - Parties involved in the energy production and distribution process (I.19.1, I.19.2, I.19.3, I.19.4)	V9 - Parties involved in the energy production and distribution process (I.19.1, I.19.2, I.19.3, I.19.4)
V5 - Degree of indebtedness (I7) V10 - Crisis resolution (I22)	V10 - Crisis resolution (I22)

Source: Own processing

Thus, we set out to identify a model that could help us to design the profile of the legal entity electricity end-user. We can see below the correlation calculated in SPSS between the dependent variable OCFPJT and the independent variables:

Table 7. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.504 ^a	.254	-.119	.25224	2.417
a. Predictors: (Constant), V11, V7, V1, V9, V3, V5, V10, V2, V4, V8					
b. Dependent Variable: V					

Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

According to Table 5, we find that there is a mean correlation with a link of 0.504 between the dependent variable corporate end-users' opinion on energy transition and the independent variables V1-V11. Analyzing the determination ratio, we note that the variation of the independent variables influences the variation of the OCFPJT variable by 25.4%.

Table 8. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.735	.446		6.137	.000

V1	-.004	.064	-.015	-.067	.947
V2	.010	.101	.045	.099	.922
V3	.110	.096	.390	1.145	.266
V4	-.102	.096	-.486	-1.063	.300
V5	-.022	.188	-.028	-.118	.907
V6	-.040	.108	-.080	-.372	.714
V7	-.110	.127	-.479	-.865	.397
V8	.109	.121	.524	.900	.379
V9	.049	.062	.221	.794	.437
V10	-.036	.038	-.203	-.961	.348

a. Dependent Variable: V

Source: Authors Computation with the aid of IBM SPSS Statistics, version 26

$$V = 2,735 - 0,004 \cdot V1 + 0,010 \cdot V2 + 0,110 \cdot V3 - 0,102 \cdot V4 - 0,022 \cdot V5 - 0,040 \cdot V6 - -0,110 \cdot V7 + 0,109 \cdot V8 + 0,049 \cdot V9 - 0,036 \cdot V10 \tag{2}$$

According to the ANOVA table, the Sig. value is higher than the significance threshold of 0.05, which is why the model cannot explain the correlation between the variables, as it is invalid. Most respondents hold managerial positions in micro-entities with debt ratio below 60%. They are interested in the transition to RES-E and affected by the current energy crisis we are facing. The main impediment in validating the model was the small number of respondents, plus the lack of separation by business area.

V. CONCLUSION

After processing the questionnaire in IBM SPSS Statistics, version 26, we have shown that there is an average relationship between the answers to the questions that make up the questionnaire and the perception of OCFPFT. The most significant influence on OCFPFT is the level of education. As this level increases, individuals are more informed and aware of the importance of this transition. In the case of OCFPJT the model cannot explain the correlation between the variables, the model is unvalidated.

The paper presents a number of implications, the most relevant would be the significant link OCFPFT and the independent variables that compose the model. Consumers are directly affected by rising electricity prices, and government interventions or increased RES-E generation would decrease the burden of paying bills. Thus, the more likely the consumer is to transition to RES-E, the more state institutions and investors will accelerate RES-E investment. Based on the answers received from the respondents and their processing, the perception of RES-E has been made known, which is one more reason for policy makers not to ignore consumers' wishes, otherwise they will have to face the negative consequences. Regarding the limitations of the research, we mention that the main impediment was the number of respondents, the preponderance of respondents from rural areas compared to urban areas, which leads us to believe that their receptivity is directly related to economic affectation, the grouping of respondents' legal entities by fields of activity. As future research directions, we believe that conducting a study based on testing the opinion of RES-E producers on the state's involvement in RES-E, offers the possibility to identify in a more objective manner the main obstacles to energy production, exclusively from RES-E.

REFERENCES

1. Bayulgen O., & Benegal S. (2019). Green Priorities: How Economic Frames Affect Perceptions of Renewable Energy in the United States. *Energy Research & Social Science*, 47, 28-36.
2. E.C., (2021). Priority Question for written answer P-004363/2021, addressed to the Commission Rule 138 of the Rules of Procedure, https://www.europarl.europa.eu/doceo/document/P-9-2021-004363_RO.html
3. E.C., (2022). Q&A on REPowerEU: Joint European Action for more affordable, secure and sustainable energy, 8 March, 2022, <https://ec.europa.eu/commission/presscorner/detail/ro/qanda221512>
4. Colgan, D. D. (2013). *Petro-Aggression: When Oil Causes War*. Cambridge University Press.
5. Constantin C. P, Chitu I.B., Gradinaru E., Dovleac L., & Bratucu G. (2019). Approaching the Bioeconomy in Terms of Increasing the Energy Efficiency of Households in Romania. Accessed at: www.amfiteatruconomic.ro
6. Deng M., Leippold M., Wagner A.F., & Wang Q. (2022). Stock Prices and the Russia-Ukraine War: Sanctions, Energy and ESG. SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, May 1, 2022. Accessed 3 January 2022. <http://www.ince.ro/Publicatii/Tezaur/IEM-2007-site.pdf#page=22>.
7. Fatbardha M., Ergün U., & Hysa E. (2021). Understanding Drivers of Renewable Energy Firm's Performance. *Environmental Research, Engineering and Management*, 7(3), 32-49.
8. Internationale_Akzeptanzumfragen, (2022). accessed at: https://www.unendlich-viel-energie.de/media/file/427.AEE_RK29

9. Janusz A., and Graczyk M. (2020). Green Certificates as an Instrument to Support Renewable Energy in Poland-Strengths and Weaknesses. *Environmental Science and Pollution Research*, 27(6), 6577-88.
10. Marinescu N. (2020). Changes in Renewable Energy Policy and Their Implications: The Case of Romanian Producers. *Energies*, 13(24), 6493.
11. Marks-Bielska R., Stanisław B., Katarzyna P., & Krystyna K. (2020). The Importance of Renewable Energy Sources in Poland's Energy Mix. *Energies* 13(18), 4624.
12. Rimšaitė L., (2019). Corruption Risk Mitigation in Energy Sector: Issues and Challenges. *Energy Policy* 125, 260-66.
13. Vainio, A., Varho V., Tapio P., Pulkka A., & Paloniemi. (2019). Citizens' Images of a Sustainable Energy Transition. *Energy*, 183, 606-16.