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## Article

# The REPowerEU Plan and the Transition to Green Energy in Romania

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# THE REPOWEREU PLAN AND THE MAIN CHALLENGES FOR THE TRANSITION TO RENEWABLE ENERGY IN ROMANIA

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## Abstract

The energy system of the European Union has suffered major changes in the recent years. High energy prices, increased energy security concerns and heavy reliance on gas, oil, and main combustibles coming from Russia have the three most important features of the EU energy sector in 2022. The European Commission has presented in the first part of 2022 the REPowerEU Plan which aims to implement measures to economise energy, generate clean energy, and diversify the origin of energy provisions and stocks. This program is supported by economic and legislative actions to shape the additional energy infrastructure and framework that Europe requires.

This article focuses on the part related to the green energy transition of the REPowerEU, by investigating the perception of Romanian companies about favourably substituting fossil fuel to decrease emissions and reliance.

This research examined the obstacles/challenges that have an impact on the adoption of renewable energy from the point of view of Romanian companies. An econometric model was conceived and it encompassed five variables that were analysed to see how they could impact the decision to accept and implement green energy in Romania. The article applied a quantitative study, with the primary data collected with a survey on managers in companies from five of the most energy intensive industries in Romania. The data was processed with the structural equation modelling (SEM) and the results revealed that market (economic), technological and administrative obstacles affect with a major impact the implementation of renewable energy technologies in Romania. Community (social) and organisational obstacles have been determined to influence with a medium effect on the deployment of renewable energy technologies in Romania. The outcomes of the article

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contribute to increasing awareness of the imperativeness of substituting fossil fuels by accelerating Romania's clean energy transition and considering the great potential the country has for making this switch.

**Keywords:** REPowerEU Plan; renewable energy transition; substitution of fossil fuels; Romanian companies

**JEL Classification:** Q40; R15; M14

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## **Introduction**

At the beginning of 2022 the world's energy system was disrupted mainly because of Russia's invasion in Ukraine. It provoked a constant rise in energy prices, it deepened energy security issues, and it drew attention to the European Union's over-reliance on Russian natural resources. This new geopolitical and energy market framework puts a pressure on the EU to speed up the process of clean energy transition and enhance Europe's energy independence from questionable suppliers, on the one hand, and from fossil fuels, on the other hand.

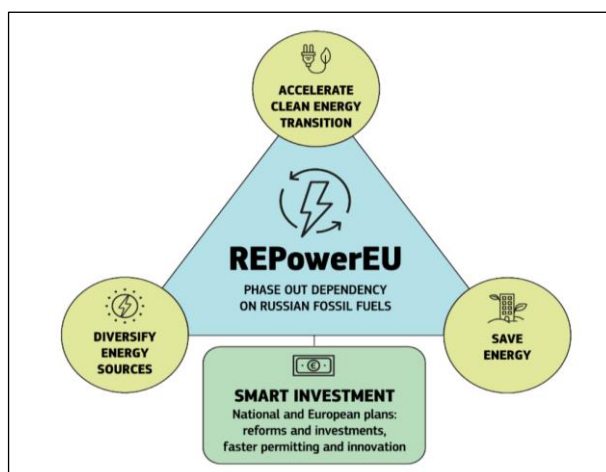
In March 2022, the European Commission put forward the REPowerEU plan that seeks to lower the reliance on Russian fossil fuels by making Europe independent from this point of view before 2030. REPowerEU includes various actions in order to: conserve energy, vary supplies, rapidly replace fossil fuels by hastening Europe's clean energy transition, and actively mix financing and upgrades. As of December 2022 the European Parliament and the Council have reached a political consensus on investments of REPowerEU and helping the EU Member States to implement REPowerEU sections in their recovery and resilience plans. Within the plan, the measure regarding increasing the supply of renewable energy offers a solution to the challenges of: continuous growth of Europe's population, contributing to the issue of global warming and, at the same time, reducing the dependence on Russian fossil fuel imports.

This paper underlines the scale of demand, and the essential role that the corporate environment has in increasing renewable electricity capacity and opening access to renewable electricity in new markets. The article also takes into consideration that the renewable transformation of Europe's and implicitly Romania's energy system will consolidate economic progress, build up its industrial administration and direction, and help to reach climate neutrality by 2050. With regard to the current state of events, the objectives of this research were to identify the main challenges/obstacles in Romania along with their impact in order to accept and implement renewable energy technologies. The article continues with a review of several relevant references on the subject, on the basis of which the hypotheses of the study are strengthened, followed by the methodology of the paper, in which the proposed econometric model is described in more detail, continuing with the results of our own research and the formulation of recommendations and suggestions integrated in the conclusions section.

## **1. Literature review**

A significant acceleration and advancement of renewable energy in power generation, manufacturing, trading, construction, and distribution (shipment) will intensify the process

of switching from of Russian gas. Altogether, over time, it will decrease electricity expenses and diminish gas imports backing up the REPowerEU Plan (Figure no.1).

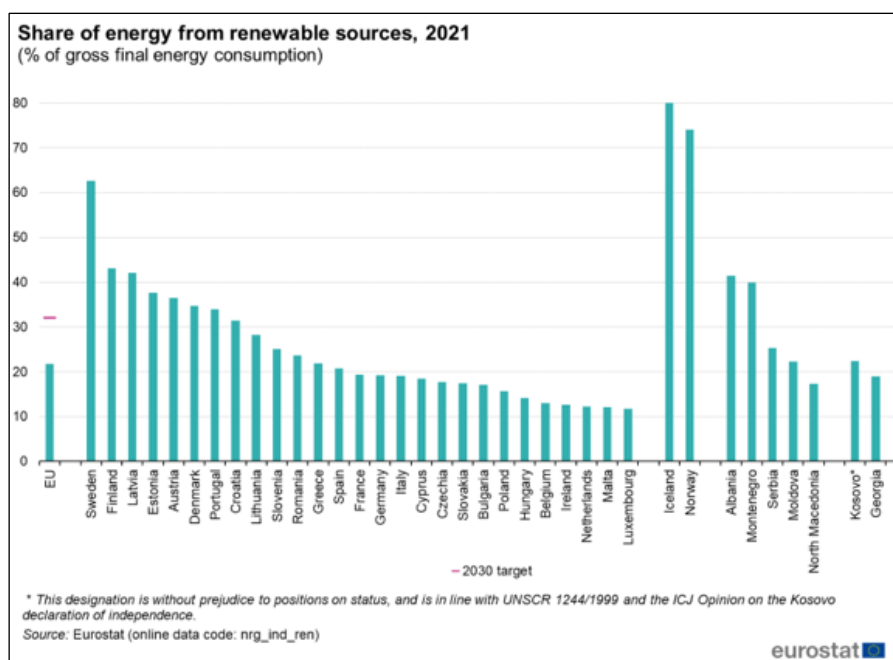


**Figure no. 1. The set of actions put forward by the REPower Plan**

*Source: European Commission, 2022. REPower EU plan*

The REPowerEU plan has taken shape ever since the EU countries committed themselves to achieving climate neutrality by 2050 (under the Paris Agreement) by the European Green Deal, which was formulated from the beginning as the EU's strategy to smooth the road to a green transition, ultimately achieving the 2050 objective. Among the initiatives in the Green Deal, the Fit for 55 package can be mentioned, which represents a series of initiatives enclosed within the EU Green Deal, to re-examine climate-, energy- and transport-related legislation and settle for new amendments that align with the EU's climate objectives. The European Council has fixed the objectives for the EU to reduce its greenhouse gas emissions with minimum 55% until 2030, in comparison with 1990, and established a new binding renewable energy target of at least 32% evolving in this way into climate neutral by 2050 (Figure 2 below). REPowerEU strengthens the potential for complete accomplishment of the Fit for 55 measures and reaches a minimum of -55 % net GHG emissions until 2030 and climate neutrality until 2050 in accordance with the European Green Deal (European Commission, 2022).

Regardless of the impressive publicity and engagement within different countries, just a minor proportion of energy comes from green sources, particularly in developing countries (Dincă et al., 2022; Nițoi et al., 2021). This is caused by multiple obstacles that handle and deal with the distribution and expansion of renewable energy. These complications prevent green energy from keeping up strongly with energy coming from traditional sources and impede the fulfilment of the needed development (Dinu et al., 2022). The factors which were retrieved from the literature on the difficulties of development and enforcement of renewable energy are: economic, social, organisational, technological, and administrative (governing) and therefore they will be tackled in this literature review as well.



**Figure no. 2. The share of energy from renewable sources**

*Source: Eurostat, 2021*

### 1.1 Market/economic challenges

One of the most important criterion that have kept renewable energy from developing into a wide-ranging one is the challenging rivalry with energy coming from fossil fuels. The renewable energy quota in the world's power generation peaked at approximately 13% in 2021, stronger than the share of nuclear energy (9.8%). The share of coal in the power sector recorded the level of 36% in 2021 while the one of gas in 2021 stayed around its value from over ten years, which was 23% (BP, 2022). Therefore, it is settled that the energy deriving from fossil fuels remains a powerful alternative to renewable energy. Thus, the first item of this variable is stiff competition from more established energy sources.

Another contributing factor to the under-development of green energy is represented by the insufficiency of subventions from public authorities or private financing schemes granted to renewable energy compared to classical sources of energy (there is only a small number of financing institutions for renewable energy projects in contrast with fossil fuel energy projects) (Seetharaman et al., 2019; Safwat Kabel & Bassim, 2020). One of the main causes for that is that investments in green energy projects are regarded as uncertain, thus discouraging investors (Ohunakin et al., 2014).

Renewable energy projects suppose an expensive preliminary capital due to the risky success green technology and the extended period of reimbursement (of the initial investment), and these disadvantages can persuade investors against making a funding (Lu et al., 2020). The third item of the variable is, therefore, the cost – specifically, capital

costs, or the upfront cost of building and installing renewable technologies. All the elements enumerated above lead to the formulation of the first hypothesis:

H1: Market/economic challenges have a significant and negative impact on the implementation of renewable energy technologies in Romania.

### **1.2 Community/information/social challenges**

The transition from traditional sources of energy to green energy faced disapproval from society at the time. The first cause would be public understanding and information translating into: the low level of information and awareness about the processes of implementing and maintaining green energy technologies and also about their potential ecological and financial benefits (Mirza et al., 2009).

Public dissatisfaction with renewable energy (from civilians, governmental representatives, communities NGOs) happens because of alteration of landscapes and its impact, interposing with stable lifestyles, ecological concerns and shortcoming in the dialogue with local communities (Streimikiene et al., 2021; Rosso-Ceron & Kafarov, 2015).

Another impediment is the requirement of a skilled labour force with expertise in renewable energy and the lack of specialists in design, building, training, maintenance, and operations for a renewable energy plant (Juszczak et al., 2022). The scarcity of trained workforce capable to generate and develop renewable energy projects is therefore seen as another serious holdback to the implementation of renewable energy (Ansari et al., 2016; Dincă et al., 2021). All these ideas lead to the formulation of the second hypothesis:

H2: Social (community) challenges hold a major impact on the implementation of renewable energy technologies in Romania.

### **1.3 Organisational challenges**

Although companies have begun to realise (and feel) the magnitude of the energy transition, many are still underestimating the pace required to deliver the change demanded. Corporations which excelled at incorporating renewable energy have done so by linking the benefits of green energy technologies with wider business purposes and values (Mercer, 2021).

The energy culture of a company could be described as the degree to which considerations of energy are embedded in the organisation's practices and processes, particularly those relating to decision-making (Rohdin & Thollander, 2006). Several studies have indicated that the absence of a positive energy culture (having efficiency targets, already having obtained an Energy Efficiency Certificate, or a member of staff is in charge with responsibility for energy concerns within the company) is a key determinant of failing to transition to clean energy (Brown & Sherriff, 2014).

Apart from that, the leadership is another important organisational component, and if it does not take energy concerns into account (energy auditing, but also courses and training for the staff and management teams), it could cause problems for the process of a successful clean energy transition. There is evidence that training on energy topics is growing the skills of employees in large firms relating to energy management (Jalo et al.,

2021). Not setting the bar high enough for corporate leadership on renewable electricity, not imposing certain exigences of energy for which board members are responsible, and celebrating their achievements to encourage others to follow could definitely slow down the transition to clean energy (weforum, 2020). Therefore, the above ideas lead to the formulation of the third hypothesis:

H3: Organisational challenges have a significant impact on the implementation of renewable energy technologies in Romania.

#### **1.4 Technological challenges**

One of the most relevant technological issues we can name is the none or limited availability of physical infrastructure and of transmission and distribution networks in promising locations of renewable energy supply, which leads to a scarce exploitation of their capacity. Another item that prevents growth for green energy is grid integration. Numerous energy power plants are located in remote places, and they need supplementary transmission to link the head grid, and multiple current grids are not devised to incorporate green energy; therefore, they should be replaced or improved (Hosseinalizadeh et al., 2021; Mirza et al., 2009).

The insufficient amount of research and development (R&D) activities and skills represents another point that may restrict renewable energy development (Khezri et al., 2021). Funding in R&D is not substantial enough to ensure competitiveness for the one in fossil fuel (Moagăr-Poladian et al., 2015). Public authorities and energy corporations limit financing in R&D for renewable energy projects because of the big uncertainty connected to this technology (Mohsin et al., 2022).

Apart from that, the finite number of standards, methodologies, and working norms in green energy technologies in reference to sustainability, accuracy or achievement do not permit renewable energy to accomplish an extensive range of marketability, another item which is putting a pressure for the development of green energy (Weitemeyer et al., 2015). According to the studies specified above, the fourth hypothesis can be stated:

H4: Technological challenges have a relevant impact on the implementation of renewable energy technologies in Romania.

#### **1.5 Administrative challenges**

Independent energy consultancy Eclareon has published in the 2022 report the barriers that block wind and solar energy projects in all 27 EU countries and the UK (Eclareon, 2022). The main problem identified in the report for Romania is the recurring amendments to the main renewable energy law and the low consistency of the regulatory framework, which inevitably stalls renewable projects. In Romania, the implementation of renewables is hampered by a lack of confidence in the underlying schemes, caused either by frequent changes in regulations or a lack of transparency of actual methods (Cristea et al., 2020).

Simultaneously, the complexity and inconsistency of the bureaucracy also lengthen the administrative procedures in general and increase the capital expenditure of renewable projects (Seetharaman et al., 2019; Aceleanu et al., 2017).

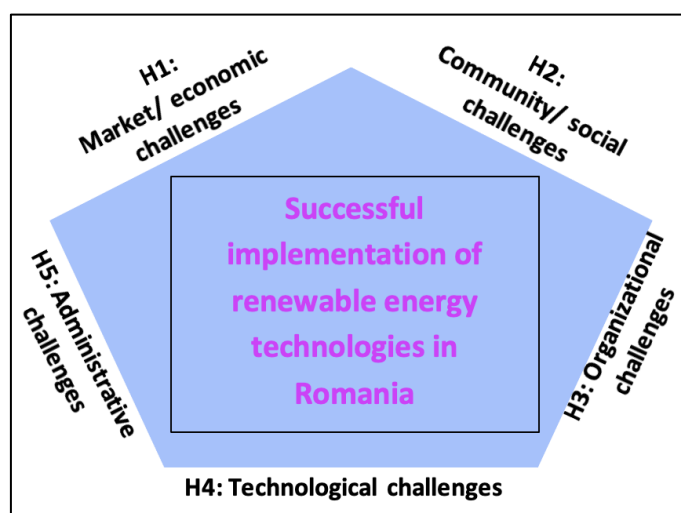
Also, we can mention that Romania's potential for sustainable renewable energy development is far greater than the country's future plans regarding the renewable energy development and carbon emission reduction for the next decades. The fixed targets can be achieved without any support schemes due to Romania's natural wind and solar potential; therefore, Romania should push more and surpass the recommendations made by the European Union (34%) because it has the prospects (Eclareon, 2022). The mentions made at this point lead us to formulate the fifth hypothesis:

H5: Administrative challenges have a meaningful impact on the implementation of renewable energy technologies in Romania.

An overview of the five hypotheses of the model is encompassed in the Figure no.3 below.

## 2. Research methodology

Several studies have been conducted over the years about the barriers of implementing renewable energy from the point of view of experts within the energy domain. The aims of this research revolve around the particular approach from the REPowerEU Plan about how to achieve the replacement of fossil fuels with green energy sources from the point of view of representatives of companies from Romania within industries which are mostly affecting the environment. These objectives of the study materialised in the form of five hypotheses through which the authors aimed to identify the main challenges/obstacles in Romania and their impact on the acceptance and implementation of renewable energy technologies. An overview of the five hypotheses of the model is included in figure 3 below.



**Figure no. 3. Overview of the econometric model regarding the challenges affecting a good implementation of renewable energy technologies in Romania**

The basic rule for selecting respondents for the study was that they have a management position and that they are also in charge of energy issues within their work. The data was collected from study participants through a structured and closed-ended questionnaire with



data collected between December 2022 - January 2023 and the convenient random sampling technique was used to determine the final number of respondents for this survey. The authors received 233 completed questionnaires, but subsequently the data was refined and a total of 217 responses were adopted as material for this article.

The identification questions required details about the respondent's age, gender, degree of education, position within the company and the industry. Thereafter, the participants in this survey gave information in relation to the model's variables. More notably, five variables related to the obstacles that prevent renewable energies to expand in Romania were assessed: market (economic); community (social); organisational (corporate); technological and administrative. The model's variables have been assessed with four-point Likert scaling method running from (1) 'Strongly disagree' to (4) 'Strongly agree'. The dependent variable is the "favorable implementation of green energy projects", we used a four-point Likert scale spanning from (1) "Very low" to (4) "Very high".

First, the demographics of the respondents were analysed using descriptive statistics. The reliability and validity of the data were assessed through statistical analysis tools like Cronbach's alpha, average variance extracted (AVE), and convergent reliability (CR). With the confirmatory factor analysis (CFA), the model fitness was evaluated. Finally, to test the study's hypotheses, the technique of structural equation modeling (SEM) has been applied to examine the links existing between the variables of the model. This analysis was performed with the softwares AMOS vs. 26 and SPSS vs. 29.

### 3. Findings and discussions

Table no.1 shows respondents' demographic details. From the final sample of 217 people (all Romanians), 119 males (55%) and 98 females (45%) between the ages 28 and 71.

**Table no.1. Identification information of the participants and their companies**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>	<b>Education</b>	<b>Frequency</b>	<b>Percent</b>
Male	119	55	Bachelor	92	42
Female	98	45	Master	114	53
<b>Age</b>	<b>Frequency</b>	<b>Percent</b>	<b>PhD</b>	11	5
18-30	34	16	<b>Manager's industry work experience</b>	<b>Frequency</b>	<b>Percent</b>
31-42	66	30	Less than 10 years	30	14
43-54	78	36	10-19 years	109	50
55-66	39	18	Over 20 years	78	36
<b>Industry of the company</b>	<b>Frequency</b>	<b>Percent</b>	<b>Number of employees of the company</b>	<b>Frequency</b>	<b>Percent</b>
Textile	38	18	10-50 employees	32	15
Transport	52	24	51-150 employees	108	50
Construction materials	49	22	151-250 employees	46	21
Agro-alimentary	41	19	Over 250 employees	31	14
Chemical	37	17			

*Source: Authors' own computation*

The following step of the statistical analysis was to assess the fitness of the model using reliability and validity and confirmatory factor analysis (CFA). We used Cronbach's alpha and convergent reliability (CR) to measure the reliability and the average variance extracted (AVE) to assess the validity. The minimum discrepancy function divided by degrees of freedom (CMIN/df) was 2.264 – a good result, since in the literature, a CMIN/df smaller than 3 suits well the conceptual model and the tangible results of a survey (Kilic, 2016). The normed fit index (NFI – known under the name of Bentler - Bonett) calculated the value of 0.893, showing a good fit for the model, as a result close to 1 indicates an ideal fit.

For the reliability of the model, the variables with the factor loadings of their items are shown in Table 2 along with the composite reliability (CR) and the Cronbach's alpha for all variables. The results for the CR and Cronbach's alpha for all variables were values higher than the suggested limit in the literature: 0.7 (Bonett & Wright, 2015). For the CR, the calculations ranged from 0.72 to 0.89 and Cronbach's alpha ranged from 0.751 to 0.904. The (discriminant) validity of the model's variables was computed with the average variance extracted (AVE), reaching between 0.561 and 0.678 and according to the literature, an AVE of a minimum of 0.50 is endorsed. The factor loadings (the variance interpreted by the variable on that specific sub-factor) (Vinzi et al. 2010). For the SEM method, as a recommended guideline, a factor loading of 0.7 or above means that the factor extracts enough variance from that variable (Ullman & Bentler, 2012), and this was confirmed for our model for all the loadings (as shown in Table no.2).

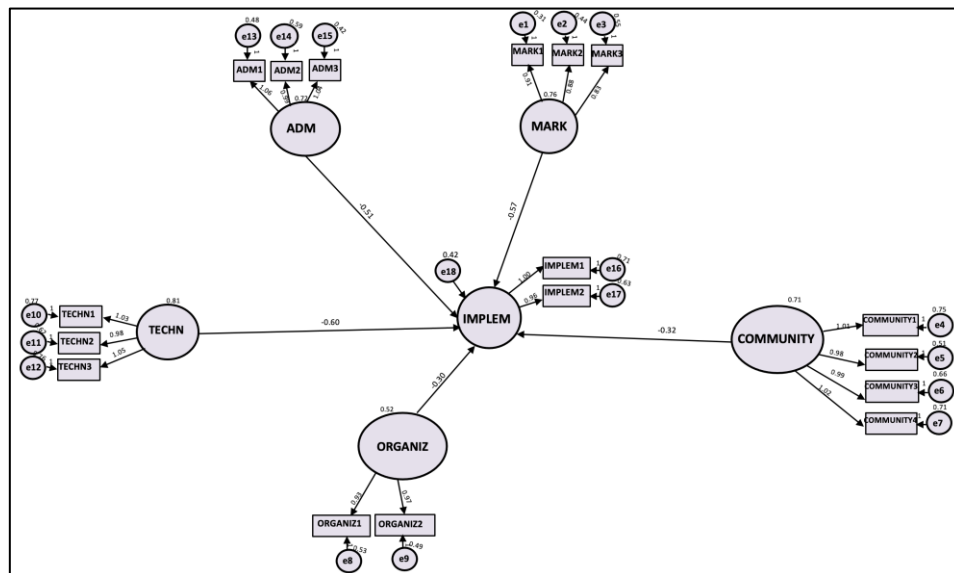
**Table no.2. The hypotheses' reliability and validity analysis**

Variable	Item	Cronbach's Alpha	CR	AVE	Loading
Market/ Economic challenges (MARK)	MARK 1 - Rivalry with energy coming from fossil fuel	0.782	0.81	0.561	0.802
	MARK 2 - Insufficient investment funds				0.759
	MARK 3 - Expensive initial capital				0.784
Community/ social challenges (COMMUNITY)	COMMUNITY 1 - Low level of information and awareness	0.837	0.78	0.582	0.809
	COMMUNITY 2 - Alteration of landscapes				0.765
	COMMUNITY 3 - Changes within lifestyles				0.813
	COMMUNITY 4 - Scarcity of trained workforce capable to generate and develop renewable energy projects				0.797
Organi- sational challenges (ORGANIZ)	ORGANIZ 1 - Absence of a positive organisational culture focused on energy issues	0.751	0.72	0.598	0.843
	ORGANIZ 2 - Inadequate focus of corporate leadership on energy problems				0.861
Techno- logical challenges (TECHN)	TECHN 1 - Limited availability of physical infrastructure and of transmission and distribution networks	0.904	0.89	0.645	0.905
	TECHN 2 - Insufficient amount of research and development (R&D)				0.873

Variable	Item	Cronbach's Alpha	CR	AVE	Loa- ding
	activities and skills				0.869
	TECHN 3 - Finite amount of standards, methodologies and working norms in green energy technologies				
Administra- tive challenges (ADM)	ADM 1 - Recurring amendments to the main renewable energy law	0.812	0.83	0.621	0.832
	ADM 2 - Complexity and inconsistency of the bureaucracy				0.855
	ADM 3 - Insufficient exploitation future plans of Romania's green energy potential				0.861
Favorable implementat ion of renewable energy projects (IMPLEM)	IMPLEM 1 - Favorable implementation of green energy projects at local level	0.857	0.79	0.678	0.835
	IMPLEM 2 - Favorable implementation of green energy projects at national level				0.812

Source: Authors' own computation

For the assessment of the study's five hypotheses the structural equation modelling (Figure no. 4) was used, which allowed for a deeper analysis of the connections among the model's variables.



**Figure no.4. Output of the SEM Model**

Source: Authors' own computation

The suitability of the SEM design was assessed with the results of the chi-square statistic ( $\chi^2$ ), CMIN/df ratio, NFI and RMSEA indicating that the model matched significantly the data and supported the outcome that the model was suitable in order to continue testing the study's hypotheses. The output regarding the hypotheses' testing are shown in Table no. 3.

**Table no.3. Evaluation of the research hypotheses**

Hypothesis	(Path) Relationship	$\beta$ (Estimation)	Decision (Accept ?)
1	MARK $\rightarrow$ IMPLEM	-0.561***	Accept (Major impact)
2	COMMUNITY $\rightarrow$ IMPLEM	-0.322***	Accept (Medium impact)
3	ORGANIZ $\rightarrow$ IMPLEM	-0.298***	Accept (Medium impact)
4	TECHN $\rightarrow$ IMPLEM	-0.597***	Accept (Major impact)
5	ADM $\rightarrow$ IMPLEM	-0.513***	Accept (Major impact)

Note:\*\*\*p<0.01.

The literature broadly concurs that standardised path coefficients ( $\beta$ ) recording absolute scores smaller than 0.10 signals a "small" impact, scores around 0.30 point to a "medium" impact with scores bigger than 0.50 imply a "big" impact (Mueller & Hancock, 2019). Taking that into account, the outputs of this study showed that the five hypotheses were subsequently accepted: the path coefficients of "market challenges" associated with Hypothesis 1 ( $\beta=-0.561$ ,  $p<0.01$ ) proved that a significant negative impact exists on a favourable implementation of green energy technologies because of competitors involved in business dealing with energy coming from fossil fuel, difficulties to attract investors to fund renewable energy projects due to the risks involved and because of high entry threshold (expensive starting capital). Therefore, H1 was accepted, confirming the idea that although some technologies are mature enough to compete with conventional energy sources, the lack of revenue predictability makes it very difficult to demonstrate to investors (specially to banks, for example) the financial feasibility of such projects, making it difficult for companies willing to implement them to find financing solutions.

Similarly, the path coefficients for "technological challenges" referred to in Hypothesis H4 ( $\beta=-0.597$ ,  $p<0.01$ ) showed that respondents perceived that outdated infrastructure and transmission and distribution networks, insufficient interest in research and development (R&D) activities and skills and minimum standards in terms of durability, reliability, and performance for renewable energy projects impact negatively and majorly a favourable incorporation of renewable energy technologies in Romania and that determined the acknowledgement of H4. This puts Romania at risk of failing to reap the benefits of new and innovative business models and ecosystems that can perform well in the future.

This study has also recognised Hypothesis 5 relying on the numbers for the path coefficients of "administrative challenges" ( $\beta=-0.513$ ,  $p<0.01$ ) implying that frequent modifications to the main renewable energy laws, the many bureaucratic layers, and inconsistent future plans of Romania's green energy potential negatively and substantially influences the implementation of renewable energy in Romania. This negative and major impact of the fifth variable of the model confirms that the deployment of renewable energy technologies is greatly hampered by the lack of confidence of business representatives in the underlying schemes, caused either by frequent regulatory changes or lack of transparency of the actual methods.

The path coefficients for "community/social challenges" H2 ( $\beta = -0.322$ ,  $p < 0.01$ ) hinted at the acceptance of H2 with a medium effect. This implies that the limited general information and public awareness related to new technologies and the low level of

understanding the practical problems about implementing and maintaining renewable energy projects, the landscape-disturbing nature of some of the renewable energy technologies, the potential lifestyle modifications of communities to support a renewable energy projects, and the high demand for skilled professionals to design, build, operate, and maintain renewable energy projects negatively with a medium effect influences the incorporation of energy renewable projects in Romania. Today, in 2023, even if training programmes are being implemented in Romania, it is expected that labour force retention will be a problem that will not be easily solved against a background of less advantageous working conditions compared to Western European countries.

Together, the path coefficients of “organisational challenges” as well as H3 ( $\beta = -0.298$ ,  $p < 0.01$ ) indicated that a low priority of energy issues within the companies’ values and the corporate leadership underestimating the pace required to deliver the changes needed for clean energy transition are all negatively and with a medium effect influence the incorporation of renewable energy projects in Romania.

### **Conclusions**

Numerous scientific articles and theses have approached clean energy transition related-issues and with the 2022 REPower EU plan, the European Commission put forward several revisions of EU laws within the energy sector that would intensify the assimilation of renewable energy sources. This article aimed to investigate the problems and difficulties impacting the opinions of representatives of Romanian companies (from energy intensive industries) regarding the incorporation of renewable energy projects and technologies in Romania. An econometric model was conceived with five different variables and their afferent items; the model was analysed to see how these challenges influence the process of renewable energy projects assimilation in Romania. The article integrated approaches from different previous studies (but keeping the particularities of the Romanian business and economic environment) and the ultimate version of the set of variables included in the model were challenges: regarding the market (economic); regarding the community (social); organisational (corporate); technological and administrative. A quantitative analysis was performed, and the data were collected from respondents who hold a management position within companies of industries which are mostly affecting the environment (the respondents are also being responsible for energy issues within their work/position). We used the techniques of Confirmatory Factor Analysis and Structural Equation Modelling to analyse the data from a statistical point of view. The results of the study revealed that the respondents considered market (economic), technological and administrative challenges having a negative and major impact on the implementation of renewable energy technologies in Romania. These results corroborate the ones from the studies from Seetharaman et al. (2019) and Hosseinalizadeh et al. (2021) keeping the specificities of the business environment from Romania. The community/social and organisational challenges were perceived by the study’s respondents to negatively influencing but with a medium effect the process of implementing renewable technologies in Romania. Similar results were obtained in the studies conducted by Jalo et al. (2021) and Streimikiene et al. (2021) with the mention that these were conducted in Sweden, Poland, and Finland, respectively, and the impact identified in these studies for societal and community challenges is major in these countries.

This study tackled different challenges for the implementation of renewable energy in Romania from the point of view of representatives of the business environment. Some recommendations could be formulated after obtaining the results with the help of these representatives, stating that there are still several challenges to renewable energy development in the country. These recommendations can be useful to both company managers who want to implement a more sustainable approach in their companies and to important players in the renewable energy industry, as well as to academia through the opportunity to conduct various studies in this direction. This is why a more efficient coordination between the multiple stakeholders within the energy sector is needed and more innovative financing programs for renewable energy projects should be installed. This problem can be approached by multifaceted awareness-raising actions, like professional instruction, specialised conferences, business incubator schemes, NGO actions, or effective media communications. More effort to transform the renewable energy technology to suit the local culture, especially through the use of more people in the local public administration, the insertion of more locals in the employment can decrease the investment costs substantially. By tackling research and development-linked challenges, companies will have more chances to make an investment in expanding complex technologies that can improve the handling and management of renewable energy and make it more profitable and productive. At the same time, reducing bureaucracy for government/administrative procedures could stimulate attention from potential investors in renewable energy projects and therefore an extensive number of projects will be initiated. Governmental support is also necessary in terms of reducing the systematic changes in the regulatory frameworks for renewable energy projects because they are a particular destabilising factor generating high-risk levels for such projects.

A few limitations of this research can be referred to. Firstly, this study was conducted in Romania, involving the features of Romania's energy sector and also its political, social, and cultural environment. These characteristics are not alike or comparable with the particularities of other countries, and for this reason extrapolating the outcomes on other states should be proceeded with caution. Another point which could be made stronger in further research is the size of the sample – which is predicted to be bigger, however we can mention the main constraint: there were not enough respondents with a managerial position working within an energy intensive industry that would also deal with energy issues at their job or that would be sufficiently informed and interested in renewable energy projects.

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