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Article

Clean, Diversified, and Affordable Energy for the European Union in the Context of the REPowerEU Plan

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Since the establishment of the Recovery and Resilience Facility, the geopolitical context has changed considerably. The Russian invasion of Ukraine has had a drastic impact on the society and economy of the European Union. Additionally, amid a global economic outlook of economic stagnation and rising inflation, geopolitical challenges are unprecedented. One of the solutions proposed from the first days of the armed conflict in Ukraine was to reduce the EU's dependence on fossil fuels imported from Russia. The European Commission and the Member States of the European Economic Community have as their point of reference the 'Fit for 55' solution package of the European Green Deal, as well as increasing the use of renewables and further improving energy efficiency. On 18 May 2022, the Commission published that **REPowerEU Plan** the sets out joint European action in this area, complementing the measures taken regarding the security of supply and energy storage. The measures included in the REPowerEU plan enable energy savings by diversifying energy supply and accelerating the development of renewable energy that would replace fossil fuels in homes, industry, and electricity generation. In this way, the phasing out of fossil fuel imports from Russia will be accelerated. This will also reduce electricity prices and fossil fuel imports over time.

The Recovery and Resilience Facility, a central instrument of the REPowerEU Plan, will pursue the objectives of ensuring clean, diversified, and affordable energy for European users. To accelerate the energy transition in Europe, the proportion of renewables in the energy portfolio needs to increase rapidly. Thus, measures must be taken to reduce infrastructure and regulatory bottlenecks, as well as labor shortages in the field of energy. Diversification of gas supply can be done by increasing the share of imports of liquefied natural gas and imports through pipelines from non-Russian suppliers, as well as by increasing the production of biomethane and green hydrogen. At the level of household and industrial consumers, energy savings can be achieved within buildings, in the fields of transport and industry, as well as by increasing energy consumption efficiency.

Economic and business research is needed to help identify solutions to the challenges of a new energy paradigm in the European Union. In this context, the journal *Amfiteatru Economic* invites researchers to propose for publication, in issue no 64, original papers that contribute to the enrichment of knowledge and a better understanding of the implications of the REPowerEU strategic plan.

In this issue of the journal we have 11 articles on various topics of interest, as follows:

The paper "**Aligning public policy with REPowerEU program objectives by adopting EESS solutions: a technology acceptance model approach**", investigates the perspective of increasing energy efficiency among Romanian household consumers through the adoption of intelligent energy control devices (EES). The research is based on the

extended technology adoption model and analyses the behaviour of Romanian consumers regarding the intention to use EESS solutions, in relation to three main influencing factors (awareness, environmental considerations, and public policy) moderated by demographic factors. The research results suggest that all the predictors considered positively influence the behavioural intention to use EESS, with public policies having the greatest effect, followed by awareness. Furthermore, attitudes towards adopting SESS differ according to age and average income level. The IMPA (Importance-Performance Matrix) model also provides a series of guidelines for managerial intervention, mainly addressed to the authorities, in order to align public policies in Romania with the objectives of the REPowerEU programme.

The article “**The REPowerEU plan and the main challenges for the transition to renewable energy in Romania**”, focuses on the green energy transition part of REPowerEU, by investigating the perception of Romanian companies on favorable fossil fuel substitution to reduce emissions and dependency. By applying a quantitative study, with primary data collected through a survey of company managers from five of the largest energy intensive industries in Romania and processing using structural equation modelling (SEM), it was observed that market (economic), technological and administrative barriers affect the implementation of renewable energy technologies in Romania with a major impact. The research results contribute to raising awareness of fossil fuel substitution by accelerating Romania's clean energy transition and by taking into account the great potential the country has to make this change.

The managerial involvement and perception of the need to adapt and adjust the hotel business to the energy crisis by reducing energy consumption under the REPowerEU plan have been little addressed in the literature and are a highly topical issue. In this way, the present research “**Managerial challenges related to the efficient use of energy resources in the hotel industry**” comes to fill this gap with a qualitative study dedicated to analysing how hotel managers in Bucharest perceive the energy crisis. Important results of the study include: highlighting the perception of the energy crisis and its impact at the level of hotel units, but especially identifying the actions implemented or targeted by hotel management to reduce energy consumption, through: monitoring consumption, integrated consumption and maintenance management systems, involvement of employees and customers and, last but not least, investment in alternative energy sources.

The REPowerEU plan, through the related financial and legal measures, aims at building a new infrastructure and a new energy system at the EU level. The reduction of energy consumption is an important guideline of this plan, and in this context, the present study “**Generation differences in the behaviour of household consumers in Romania related to voluntary measures to reduce electric energy consumption**” investigates, on the basis of a questionnaire, the behavior of (household) consumers in Romania toward voluntary measures to reduce electricity consumption and identifies the behavioral differences between four generations: Baby Boomers, X, Y, and Z. The results highlight some differences in generational behavior and patterns in the approach to behavioral integration for responsible energy consumption, so that it is possible to outline the attitude and behavior of Romanian consumers toward the national and European objective of reducing energy consumption, energy waste, and increasing the share of alternative energy sources.

The present paper “**The challenges for green energy in Romania under current energy crisis**” aims to present the implications of the current energy crisis in the EU in terms of shaping public policies in Romania and aims to highlight the need for the development of

"green" energies at the EU level, considered to be a solution to balance Romania's national energy mix. The methodological approach was a mixed one and combines both a bibliometric research and a qualitative analysis based on interviews with experts in the field. The bibliometric analysis indicated the main topics of interest in the literature on green energy and the research was based on the opinions of experts involved in the development of national strategies. The results of the interviews highlighted the opportunities that exist for Romania in this field and the ways in which green energy, as a type of clean energy, can be produced at affordable prices. It is highlighted that, although Romania has performed remarkably well in recent years, there is still significant untapped potential in the field of green energy and Romania's specificities in terms of national legislation, geographical potential, and existing infrastructure were identified.

Changes in the external environment and incredibly disruptive international events significantly influence the behavior of energy consumers. In view of geopolitical changes, the energy crisis, Russia's invasion of Ukraine, and the instability of the energy market, the European Commission has developed a number of plans to ensure Europe's independence from Russia's energy resources, such as REPowerEU. The research with reference to "**Analysis of responsible energy consumer's behaviour in the context of REPowerEU plan**" concerns the analysis of the responsible behaviour of the Romanian energy consumer, as part of the REPowerEU and ANRE (National Energy Regulatory Authority) objectives. This study can serve as a guide for best practices in the field of responsible energy consumption, as follows: *Managers* can track the degree of responsible engagement and natural resource savings and cost reduction; *governments* could develop specific policies for energy consumers and develop guidelines for responsible energy behavior; *organisations*, can use special events for better information or simulation programs to forecast energy consumption in certain areas or include consumers in terms of their involvement in measures implemented by area, age, gender, level of education, and consumers as individuals can be helped to reduce energy costs, save natural resources, be involved in a healthier environment in line with the RePowerEU plan and ANRE information.

Reducing energy consumption has important implications for the sustainable development of society, but this challenge has become more pressing in the current geopolitical and strategic context. Following the strategic directions set by the European Green Pact and the "NextGenerationEU", a concrete action of the European Commission has been the elaboration and adoption of the REPowerEU Strategic Plan, whose main objectives are to achieve Europe's independence from fossil fuels supplied by Russia by 2030 and the transition to green energy. In this context, in order to know the attitude, behavior and future intentions of Romanian consumers towards voluntary measures aimed at reducing energy consumption, a research was carried out on "**Adoption of voluntary measures for reducing electricity consumption in the REPowerEU plan context: a romanian consumer perspective**" which contributes to the identification of new factors that may influence the behavior towards voluntary electricity saving measures such as those related to the level of information of household consumers and the perceived level of importance. Although the research results cannot be extrapolated to the whole population of Romania, but only to certain segments, the authors consider it a success to associate consumption behavior with these two important factors, which have not been analysed so far in the scientific literature.

Considering the long-term energy security of the EU-27, as well as the objectives of the RePowerEU plan. The paper “**Reliance on Russian Federation energy imports and renewable energy in the European Union**” investigates the importance of renewable energy in the energy mix of EU countries and their dependence on imports of gas, oil, and petroleum products from the Russian Federation. The paper divides EU countries into two groups using cluster analysis, showing that Central and Eastern European countries have similar characteristics in terms of their dependence on Russian energy imports and energy mix, while Western European countries show significant differences between group members. The authors take into account a number of considerations regarding: the difficulties for EU countries to restructure their energy systems, the similarities and differences between EU countries in terms of their dependence on Russian oil and gas imports, and whether the situation in Ukraine is likely to lead to the start of new projects to encourage the integration of renewable energy and the switch to sustainable fuels. This study seeks answers to all these questions and attempts to explore the energy dependence of EU countries on the Russian Federation and the importance of fossil fuels and renewables in the energy mix.

The global economy has barely begun to recover from the effects of the Covid-19 pandemic, only to be plunged into a new crisis by the Russian-Ukrainian war. The war exacerbated the energy problem, causing a shortage of energy supplies for the EU and other countries, which affected quality of life. As a result, the establishment of energy hubs for the collection, processing, storage, and transit of energy resources between producing and consuming countries has become imperative in order to manage energy supplies efficiently. The paper “**Requirements for establishing energy hubs: practical perspective**” investigates the requirements of setting up energy hubs, especially for oil and gas, from a practical perspective. The article also highlights the most pressing practical issues facing the establishment of energy hubs. The paper sets out a practical framework based on the views of industry practitioners to help establish energy hubs that can improve diversity, flexibility, and security of energy supply, particularly for countries that rely on single suppliers such as the EU.

Energy-intensive sectors face significant challenges in meeting the objectives of the new European Industrial Strategy and REPowerEU. The study “**Climate and energy issues of energy-intensive sectors**” aims to examine how energy consumption and the energy mix have evolved over the period 2008-2020 in four energy-intensive sectors in the EU: primary metals; non-metallic minerals; pulp, paper and printing; chemicals and petrochemicals and whether there is a real relationship between changes in energy intensity and labor intensity. The results show a positive energy mix and positive intensity trends for all major energy-consuming sectors studied. It was found that there has been a shift from high- to medium- and low-carbon energy sources, with the magnitude of this change influenced by the technological characteristics and dependencies of each sector.

With the recent dramatic increases in energy prices, it is of utmost importance that residential users significantly increase the use of renewable energy. The purpose of the study “**Understanding the human dimensions of the intention to use renewable energy in Hungary – applying an extended model of theory of planned behavior**” is to understand the complex psychological background of the intention to use renewable energy by applying the theory of planned behavior using structural equation modelling. The resulting model suggests that subjective norms have the greatest direct influence on the intention to use renewable energy. As a result, campaigns to promote the use of renewable

energy should focus on social acceptance of this behavior and educate target groups about the link between the energy issue and the challenges of climate change.

In the spring of 2022, the European Commission launched the REPowerEU plan, with the objectives of promoting energy saving, clean energy production, and reducing dependence on fossil fuel imports, in particular natural gas from Russia. These objectives are essential for achieving climate neutrality and a low-carbon economy in Europe, but in particular they aim to strengthen the EU's energy security and make Europe more energy independent and sustainable. The investments needed to achieve these goals must be seen as an investment in Europe's energy future, which will reduce the EU's dependence on unreliable and expensive energy sources outside Europe. It is also important that these investments are made intelligently and efficiently, backed up by appropriate policies and regulations, and that any waste of resources is avoided. All these are reasons why it is necessary to focus on the further implementation of the REPowerEU plan.

**Editor in Chief,
Vasile Dinu**