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**Article**

## Best practices for a sustainable energy sector at European Union level: Chances and challenges for Romania

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## BEST PRACTICES FOR A SUSTAINABLE ENERGY SECTOR AT EUROPEAN UNION LEVEL – CHANCES AND CHALLENGES FOR ROMANIA

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### Abstract

Sustainability is a trend reflected nowadays both at global level and at European Union level. This applies as well to the energy policy sector, which is being modernized considering the sustainable use of resources. This trend finds its concrete expression in the package “Clean Energy for All Europeans” adopted by the European Commission in 2016, containing measures for a modernized energy sector of the European Union, based on an Energy Union, on clean energy and renewable energies and on energy efficiency. Measures in order to build a legal and institutional framework supporting the achievement of these goals are designed in this package. The idea of a harmonized energy sector of the European Union developed in time in the past twenty years, with several steps performed in this direction. The energy sector has been liberalized, competition rules have been applied considering consumer welfare as well the development of a new and innovative business environment. The consumer focus as a novelty in the design of energy policy is gaining more and more importance.

The present paper deals with best practices related to the developments of a sustainable energy sector at European Union level, assessing as well new perspectives, chances and challenges arising for Romania in this context. Case studies illustrate these issues in a comparative manner, using an interdisciplinary approach based on mixed methods and integrating aspects of business, economics, European Union Law and European policies.

**Keywords:** best practices, sustainable energy sector, energy policy, Clean Energy.

**JEL Classification:** Q01, Q20, Q40, Q42, Q47

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## Introduction

The energy sector is one of great importance given his strategic potential. This sector was once nationalized and became a state monopoly in each country. Nowadays this situation has changed, as energy is defined as a commodity (CJEU, C-393/92 Municipality of *Almelo*, EurLex, 2019a) and it must circulate freely in the European Union, like any other commodity. In order to make this possible a framework is necessary, meaning legal and institutional measures to ensure the functioning of this liberalized sector. The importance of this issue was noticed at European Union level and, as a consequence several harmonization attempts took place in the past twenty years with the aim to build a common framework for the energy sector. Nevertheless, this process is related to challenges and impediments, given the fact that it is a strategic sector and not all European Union member States are willing to transfer competencies in this sector from national level to the European Union level.

A common energy policy of the European Union would mean speaking with one voice when talking about energy issues, which would consolidate the position of the European Union at global level. Among the goals of the European Union is becoming a Clean Energy promoter and thus contributing to CO<sub>2</sub> reduction, considering the current challenges related to climate change. This common policy is reflected in the documents of the package “Clean Energy for All Europeans” promoting the establishment of an Energy Union at European Union level and thus creating a sustainable common framework for the European Union energy sector (EC, 2019a). This goal is connected with new targets for the energy policy of the European Union, such as the new energy efficiency target of 32.5% and the new renewable energy target of 32%, which have to be achieved by 2030 according to the recently adopted European Union legislation (New Directives on Energy Efficiency and Renewable Energies, Eurlex 2019b and Eurlex 2019c).

The trend for renewable energy in the European Union is detailed in the 2050 strategy that elaborates a roadmap and scenarios for the development of the energy system and regarding greenhouse gas emissions. The new targets for 2050 are very high (with a reduction of greenhouse gas emissions of 80% by 2050). There is need to rethink the Romanian Energy Strategy in order to support the investments in renewable energy for achieving the new goals of the European Union (Tantau et al., 2018a).

Best practices for a sustainable energy sector were implemented by several Member States of the European Union, such as Germany, Austria, Italy, the United Kingdom (which is one of the most cited best practice example for the liberalization of the energy sector, despite the Brexit situation). The European Union supports a sustainable energy sector, for instance by promoting the development of Smart Cities, which is reflected in the initiative of the European Commission for supporting smart cities (EC, 2019b). This concept reverberates as well in Romania, where smart cities like Cluj Napoca are in the pilot project phase, but with an interesting development potential. These measures show the practical impact of the design of a new energy policy with an impact on the citizens of the European Union and with benefits for them.

### 1. Review of the scientific literature

The topic of a new, sustainable energy sector at European Union level is one of great interest. Former initiatives of the European Commission in the package “Clean Energy for

All Europeans” released in 2016 are already legal provisions comprised in European Union legislation, such as the above-mentioned new targets for energy efficiency and for renewable energies set in the New Directives on Energy Efficiency and Renewable Energies (Eurlex 2019b and Eurlex 2019c).

The present research analyzes case studies that have been found in the specific literature, like the United Kingdom, Germany, the Nordic Energy Market (Sioshansi and Pfaffenberger, 2006). Furthermore it assesses the development of smart cities as a best practice example for the new, sustainable energy policy of the European Union.

The assessment is performed in an interdisciplinary manner, as Law and Economics belong to econosciences (Dinu et al, 2016, p. 34) and such an approach is thus appropriate.

The present research analyses the energy sector in the context of new, sustainable energy policies, building a bridge between previous literature and the newest developments at European policy level. It considers the consumer focus as a feature of the new energy policy, as the transition towards clean energy and the willingness to support it has as well a cultural dimension (Pelau & Pop, 2018). The new sustainability-based energy policy is determined by consumer preferences (Tantau et al., 2016). Given the current trends of analysis of circular economy (Tantau et al., 2018) and of its impact on our society, the present article is in line with previous research, further developing it and adding a new perspective of European policies.

## 2. Research methodology

The present research analyses the debated topic in the relevant specific literature. It assesses as well relevant European Union legislation and relevant case law of the Court of Justice of the European Union.

Case studies from various countries in Europe (Germany, the United Kingdom, the Nordic Market) are analysed in order to provide best practices for a sustainable energy sector of the European Union. Smart cities from the European Union (for instance Austria, Italy, Romania) are as well analysed as best practice examples for the new energy policy of the European Union based on sustainability.

The questionnaire is as well used as a qualitative method providing answers for the priorities of the new energy policy of the European Union. The 130 respondents are either working in the energy sector in several countries in the European Union (Germany, Austria, Romania, Italy) or in universities in countries like Germany, Austria, Italy, Poland, Romania. The research was conducted in the period November 2018 – April 2019. The qualitative research method is used based on the valuable experience of the respondents, which are experts in the energy sector and have an excellent academic background.

Other used research methods in the present article are the analysis of metadata and meta-analysis (for example of evaluations of the European Commission regarding the progress of the energy sector, reports of competition authorities related to the competition within the energy sector).

The present paper uses an interdisciplinary research approach, combining aspects of European Union Law, European policies, business and economics, using a comparative,

international perspective for the performed assessments. Mixed methods are thus used in order to draft a pluri-perspective analysis on the researched topics.

### **3. Results and discussion**

#### **3.1. The energy sector – evolution from state monopoly towards a liberalized sector**

The energy sector is a strategic sector with a high importance. In the past it was nationalized, so that it became a state monopoly. This situation proved to be disadvantageous in the end, with too much political influence on the energy sector, so that many countries in Europe decided to liberalize the energy sector. This process occurred step by step, in different phases. Given the strategic importance of the sector, some Member States did not want to give up their influence on the sector and were reluctant to transfer competencies in this sector from the national level to the European Union level. Nevertheless, such a transfer of competencies is important if it is intended to have a common energy policy of the European Union and a harmonized energy sector. In order to obtain a liberalized energy sector, a deregulation of the sector was needed and electricity for instance became a commodity. New markets were built in this context. A next step in this evolution is a harmonized energy sector, based on common values and principles and on a common energy policy at the level of the European Union. This is intended by the release of the package “Clean Energy for All Europeans”, initiated by the European Commission in 2016. Before this step, there were several other steps achieved towards harmonization by means of the First Energy Package in 1996, the Second Energy Package in 2003 and the Third Energy Package in 2009, that achieved a step-by-step harmonization of the sector, with mutual recognition of rules and standards.

Challenges related to this issue are the lack of competition in the energy sector, which leads to market fragmentation. A better interconnection in this field and more transparency would improve the situation. According to the assessments of the European Commission (EC, 2017), progress has been achieved and competition in the sector has been improved, with more alternatives for the consumer. What still needs to be improved is cross-border trade in this field.

#### **3.2. Sustainability – a trend in the new energy policy of the European Union**

Sustainability is a concept gaining more and more importance nowadays, given the global situation of climate change and the need to find solutions in order to deal with it. There is no unique definition of sustainability, there are currently more than 300 definitions of this concept, but the main idea of sustainability is that it refers to three dimensions: the economic, the environmental and the social dimension, that have to be considered when using resources. These three dimensions of sustainability are considered in the measures contained in the package “Clean Energy for All Europeans” establishing a framework for a new, sustainable energy policy at the level of the European Union. This trend is an answer of the European Union to the concerns at global level regarding sustainability and the arising challenges of climate change.

The package “Clean Energy for All Europeans” proposes to modernize the energy sector, to build an Energy Union, to focus on energy efficiency and to increase the use of clean energy

and of renewable energy within the European Union. Concrete measures in this direction, meaning European Union legislation, new directives, have been proposed and adopted in order to fulfill these goals. An institutional framework promoting cooperation between European Union Member States by means of the Agency for the Cooperation of Energy Regulators is as well proposed in this package.

### 3.3. Best practices in the European Union for a sustainable energy sector

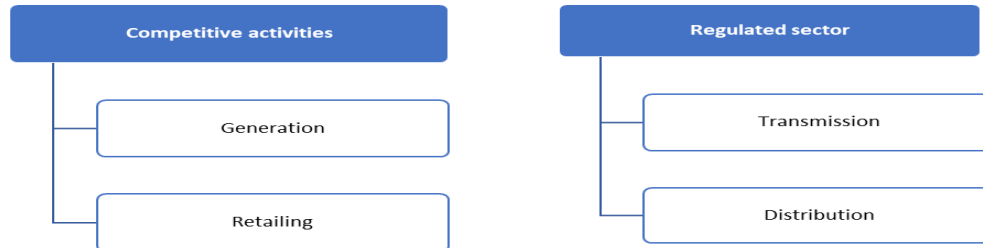
Case studies showing the liberalization process in various European countries led to best practices regarding a sustainable energy sector, based on functional competition.

The United Kingdom is, despite the Brexit-situation, one of the most cited liberalization-model in the energy sector worldwide. In the United Kingdom the influence of the political factor in the energy sector was so high, that the sector was not functioning well any longer, so it had to be redesigned in a new perspective. The liberalization in the United Kingdom was achieved by unbundling transmission of energy and generation of energy and by introducing functional competition in the energy sector.

The Nordic electricity market, where countries like Denmark, Finland and Norway can be found is organized relying on the principle of separation of competition-based activities like generation and retail on the one side and on regulated activities, like transmission and distribution of energy on the other side.

The German Market emphasizes the importance of considering environmental issues as very important as well as the promotion of investments for new and clean technologies. This case study as well shows the importance of the regulating institution, which is in Germany the Bundesnetzagentur, in ensuring a competitive environment.

Considering all these aspects a best practice example for a competitive and sustainable energy sector is reflected in figure 1 showing the separation between competitive activities and regulated activities of the energy sector:



**Figure 1. Design of a sustainable and functional energy sector**

*Source:* Own representation based on Fremuth and Parak, 2002, p. 164.

In order to ensure the sustainability of the sector, the new energy policy comes with the implementation of new concepts reflecting the policy principles, such as the concept of Smart Cities. When designing a smart city, the environmental issues and the energy efficiency are considered as well as the use of modern technology for achieving a good quality of life for inhabitants in smart cities. The European Commission supports the

initiative of developing smart cities and of strengthening the cooperation among smart cities in order to share best practices in this field. At European Union level, the initiative “European Innovation Partnership on Smart Cities and Communities” of the European Commission is the expression of these ideas and principles, facilitating the dialogue between smart cities. This platform offers the possibility to share best practice experiences related to the development of smart cities, such as initiatives, lightening, events and financing opportunities.

Vienna is one of the most liveable cities in Europe, according to rankings it was the most liveable city in 2018 (Stadt Wien, 2019b). This is the main reason why this city was selected in the present research as a best practice example. The key-elements comprised in the strategy of Vienna as a smart city in order to provide a good quality of life for its inhabitants are presented in table 1.

**Table 1: Smart City Vienna – best practices**

Vienna	Goals until 2050:
Smart City	<ul style="list-style-type: none"> <li>→ efficient use of energy</li> <li>→ good energy performance for buildings</li> <li>→ good mobility with effective use of resources</li> <li>→ environment friendly city</li> <li>→ high rate of social inclusion</li> <li>→ good education for its inhabitants</li> <li>→ focus on research, innovation and development</li> </ul>

*Source:* Own research based on Stadt Wien (2019)

Vienna focuses on using renewable energies (Stadt Wien, 2019c). The public transportation is realized mainly with electric buses and inhabitants of Vienna are encouraged to use public transportation, which is very well organized and affordable. The whole strategy of the city is oriented towards consumer welfare, in order to provide a healthy and clean environment to the inhabitants of the city. Energy efficiency is an issue always kept in mind, as resources are limited and should not be wasted. As this mentality can be educated, it is well stated in order to create awareness regarding these aspects of our society.

Similar measures with those in Vienna were proposed and implemented as well by other cities in the European Union aiming to become smart cities, for instance by the city of Milan in Italy. Milan has as strategy elements a focus on energy efficiency, developing its public transportation, developing smart buildings and an efficient public lighting as well as energy smartness, which becomes more and more important as a strategic element of municipalities.

**3.4. Best practices for Romania – lessons to be learned from other Member States of the European Union**

Romania can use the experience of other European Union Member States and can learn from this experience. Romania has a good energy mix. It could nevertheless further develop the use of clean energy. Romania uses in fact hydroelectricity, which is a form of clean energy. It can further use wind energy and solar energy in Dobrogea, where plants have already been built in order to use these resources.

It can further use wind energy and solar energy in different regions. Most of the wind parks are concentrated in Dobrogea, where the biggest on-shore wind park in South Eastern Europe was finished in 2015, with a power of 600MW, at Fântânele – Cogeaalac. Unfortunately, in the South Eastern region of Romania the energy consumption is relatively low and the energy from this park has to be transported in the central and northern part of Romania, where industry is still predominant. The initial support scheme with green certificates that was implemented in 2014 in Romania was an important business opportunity for companies, but it was not responding to the real regional energy demand in Romania.

As a challenging aspect, Romania still uses its coal mines as a source of creating energy, which is problematic due to its impact on the environment. But on the other hand, like in Poland, closing these mines is an issue with a high social impact and must therefore be well organized, so that the phasing out should not be linked to social turbulences.

Unfortunately, even in the last version of the draft for the Romanian Energy Strategy 2018-2030 there are plans for building of a new coal power station, with an installed capacity of 600MW, at Rovinari (Romanian Energy Strategy 2018-2030, page 11). This investment is not in line with best practice experiences, as coal does not produce clean energy. Therefore, the Romanian Government has to further consider other best practices for assuring the energy system stability.

Since 2016 the major investments in the energy sector in Romania are confronted with the problem of a reduced legislative predictability.

The gas power station from Brazi, with an implemented capacity of 800MW, is a best practice achievement to be mentioned in Romania. Gas has to play an important role in Romania in the new transition period to a cleaner energy. There are plans to transform the coal heating power stations in gas heating station in the main cities.

Unfortunately, currently there are no plans for developing new renewable energy facilities that may contribute to a cleaner energy in Romania.

Regarding the liberalization of the energy sector, Romania is in line with the process of liberalization of the energy sector at European Union level, so that an opening of the electricity market occurred. Romania has removed important barriers on the way to a European Energy Market: opening the market for foreign investors, coupling the electricity market, empowering the consumers and working based on the principles of the Agency for Cooperation of the Energy Regulators for achieving energy system security.

The market was opened to international energy companies which are now active on the Romanian Energy Market. Eon, ENEL, ENGIE or CEZ are main foreign investors in the energy field in Romania.

The electricity network is upgraded and integrated up to 10% from the Romanian installed power. On the way to the European Energy Market the Available Transfer Capacity (ATC) has to increase until 2030 to 20% from the installed power. First steps were performed in November 2014 with an electricity coupled day ahead market between Romania, Hungary, the Check Republic and Slovakia. The market was for the first time coupled, but the prices where different due to different interconnections capacities.



In 2016 Romania signed the contract for the accession to the Central European Region for electricity market interconnection. (PZU).

The Empowering Consumers Directive was implemented in Romania and the consumers have the opportunity to change the energy suppliers in 21 days.

New measures for a more sustainable energy market in Romania are stipulated in the Integrated National Energy and Climate Change Plan 2021-2030 that is promoted at European Union level in 2019 and it is also designed to be adopted in Romania.

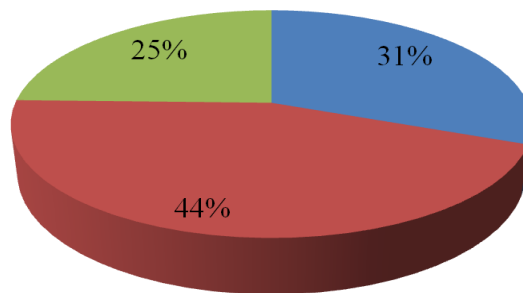
Regarding the concrete impact of new energy policies, the current development regarding smart cities are best practices that inspired cities in Romania. Following this trend, the development of smart cities is an issue with reverberations in Romania. There are pilot projects of smart cities in the cities of Cluj-Napoca and of Alba-Iulia. The goals of Cluj-Napoca in its strategy to become a smart city are represented in table 2:

**Table 2: Best practices for Romania: Cluj-Napoca – Smart city goals**

Cluj-Napoca	Goals:
Smart City (Pilot project)	→ reduction of pollution and noise → efficient parking supported by technology → good public transportation system supported by technology → clean city → electric buses

Energy policies should have consumer protection as a main priority, as well as the use of renewable energies. This applies as well at European Union level in general and in Romania in particular. The conducted research lead to the results represented in figure 2:

- Consumer protection
- Use of renewables energies/clean energy
- Other (e.g. energy security, smart vehicles)



**Figure 2. Priorities for new energy policies**

Source: Own representation based on the conducted research.

These priorities should be considered by policy making actors when drafting new, sustainable energy policies.

Another important issue to be considered regarding the situation of Romania is a better communication and cooperation between institutions with tasks in the energy field. A good cooperation with the national competition authority would be helpful, as competition issues are a key-factor in the energy sector. Complying to European Competition Law and to its provisions is mandatory, as competition issues are stated in the Treaty on the Functioning of the European Union (article 101, 102 for competition and article 107 for state-aid) and are therefore very important. Not complying to these provisions can lead to infringement procedures, a situation that should be avoided.

### Conclusions

The present research gives a multidisciplinary, international perspective on a currently debated topic, which is on the agenda of European Union institutions. Building a sustainable energy sector is a very important task nowadays, given the challenges of climate change for our society. Energy policies should be oriented towards sustainability and towards ensuring a clean and healthy environment, as well as energy efficiency. Energy policy is a field affecting the whole society, it has a direct impact on the final consumer, as we all are energy consumers and we all are as well affected by the negative aspects of climate change. New solutions must be found, including the development of new and clean technologies.

This topic is one of great interest and with an important dynamic, so that further research will for sure be needed in this expanding field. The results of the present research can be further developed and used as a basis for further research projects.

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