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EU ENERGY UNION: ADJUSTMENT TO THE NEW DEVELOPMENT CYCLE

Keywords: Energy Union, energy security, solidarity, internal market, moderation of demand, decarbonisation.

J E L Classification: F5, O1, O2.

Abstract: Purpose – The purpose of this paper is to reflect the results of the research on the recent EU European energy policy following the launch of the concept of the Energy Union in February 2015.

The authors analyse the issue of interdependency of the dimensions of the EU Energy Union: energy security, solidarity, trust, internal market, moderation of demand, decarbonisation, research, innovation and competitiveness.

Design/methodology/approach – The paper summarizes the analysis performed by the various professionals and scientists in order to propose new methodology in evaluation the status of implementation of the energy policy. For the study the authors have used generally accepted quantitative and qualitative methods of economic science, inter alia comparative analysis, parameter estimation, grouping, economically mathema-

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tical modelling, synthesis, inductive, deductive, logically constructive and expert evaluation methods.

Findings – The next step for successful realization of the EU Energy Union strategy is thorough planning for implementation of each of the defined instruments. Taking into account that fact that usually competences for practical transposition of different actions (mostly in form of legal acts) falls under responsibility of different institutions (both – regional and national), it is important to ensure an excellent coordination and constant cross-checking to avoid decrease of potential synergies between the benefits provided by the five dimensions.

Originality/value – The concept of the EU Energy Union in terms of planning the energy policy is relatively new, however energy is one of the fundamental sectors of economy having significant impact on the development of any country. The authors propose original methodology in measuring the correlation of different dimension of energy policy.

Introduction

Energy is one of the fundamental sectors of economy having significant impact on the development of a country. Within the last decades a range of new challenges appeared in Europe, such as security of supply of energy sources, climate change, lack of competition between energy companies, affordable energy prices, and other. The existing legal framework of the European Union (EU) does not perfectly fit to the challenges of the current situation; and there is a clear need for retailoring the energy policy (European Commission, 2015; Focken, 2015).

The new EU energy policy started by the *Riga process* at the beginning of 2015 and found its first highlights in the communication of the European Commission devoted to Energy Union. The resilient Energy Union aims to give the EU consumers secure, sustainable, competitive and affordable energy, defining the five main action directions (dimensions) (European Commission, 2015). The concept proved to be exciting subject for studies, including numerous debates on the origin and the impact of the concept, as for example reflected in the recent works by Austvik (2016), Glachant (2016) and Feder (2016).

The aim of the paper is to analyse the possible impact of the new EU Energy Union strategy on the existing energy sector. In order to achieve the aim, the paper investigates the five dimensions and their implementing instruments. As a result, the correlation among the dimensions has been estimated, therewith demonstrating the possible synergy effect from implementation of the defined instruments.

For the study the authors have used generally accepted quantitative and qualitative methods of economic science, inter alia comparative analysis, parameter estimation, grouping, economically mathematical modelling, synthesis, inductive, deductive, logically constructive and expert evaluation methods.

The dimensions of the debate on the Energy Union concept

On 25th of February, 2015 the European Commission came up with a proposal of a strategy of EU Energy Union, bringing forward the five action directions (dimensions): energy security, solidarity, trust; internal market; moderation of demand; decarbonisation; research, innovation, competitiveness. The fundamental difference from the previous EU goals in energy sector and the strength of the new strategy – is a common vector of all the mentioned dimensions contributing to the same single target. The idea of the Energy Union policy is that the five dimensions are strongly interconnected, being indispensable parts of a one puzzle to provide consumers secure, sustainable, competitive and affordable energy. According to the Commission, each of the "pieces" aims not to just solve a one particular problem, but ensures a synergy effect with all the other elements of the EU Energy Union strategy (European Commission, 2015). However, it should be noted that still in many aspects the economic result is not that clear, e.g.: more comprehensive assessments of economic costs and benefits are required (Schmid & Knopf, 2015).

The European Commission in its communication identified the concrete 15 actions to practically implement each of the defined dimensions. The concept of the EU Energy Union should not be surprising as the European Union has a "continent scale" power target model; while the USA and Canada have no such model (Glachant, 2016). Thus the desire to have a continent-wide solution for the energy policy may have not only political, but also economic ground.

The period from year 2014 to 2020 in the EU Energy policy is called the transitional period. The EU Energy policy 2020 determines the objective to reduce greenhouse gas emissions by 20%, increase the share of renewable energy in energy consumption up to 20% and increase energy efficiency by 20%. Moreover, the European Council has set an objective to ensure that by 2015 none of the EU countries is isolated from the European gas and electricity networks, as well as each EU member state has interconnections ratio of 10% by 2020 and 15% by 2030 (European Commission, 2015; European Council, 2014). The preciseness of the actions included in the Energy Union Package may be

also doubted, some see that the integrating renewable energy supply from electricity into the market ultimately means to move away from the unresponsive standard Feed-in Tariffs (paying subsidy for any unit of power generated by the producer), replacing them by Premium FiTs, which pay a premium on the market price but require generators to take responsibility for selling and balancing their power (e.g. Newbery, 2016). However it is still discussible if all of the policy incentives are defined in the way that the action proposed technically means the same for all.

The concept of the Energy Union is also considered to be politically influenced. As rightly mentioned, analysts should not encroach on the role of policymakers by being asked to resolve questions that involve tradeoffs among fundamental values (Feder, 2016). In some of the studies the issue of the EU and the according regulation has been strictly linked to the political issues, e.g.: compliance to the EU regulatory framework is the best way for Ukraine, Moldova and Georgia to regain energy autonomy, and thus to minimize Russia's political leverage (Dusciac et al., 2016).

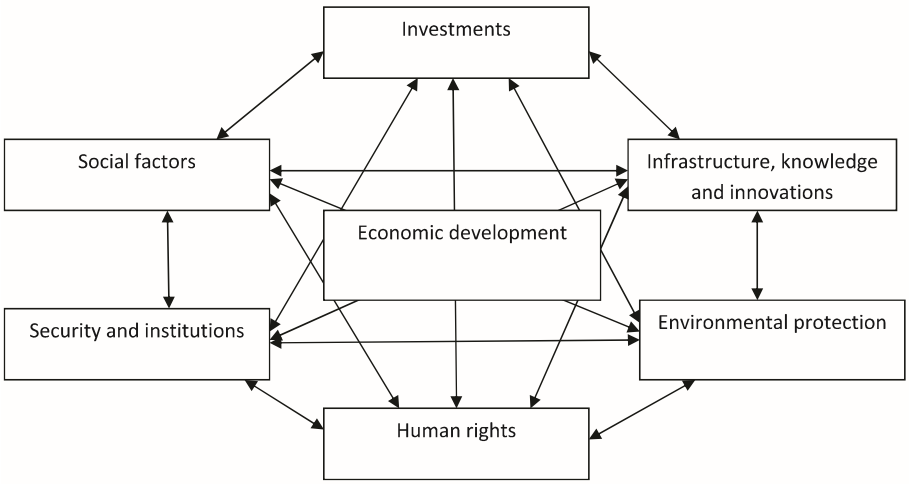
The link between the policy makers and the investment decisions has been also noted by many, e.g: "*Focusing events have a tremendous potential to the discursive context around specific market decisions. Such events can change the political climate and development priorities by concentrating the attention of the broad public and many stakeholders, which as a result can influence the market actor's long-term decisions and investments"* (Ellenbeck et al., 2015). The uncertainty caused by the lengthy political debate reflects in the slow development of many EU policies. Policy uncertainty becomes increasingly important if there is only a small amount of time available between the investment decision and the possible price shock representing the policy uncertainty of specific climate change policy events. The reason is that the value of waiting for resolution of the uncertainty increases if there is only a short time to wait (Yang et al., 2008).

The debate itself leads us to the necessity to evaluate what is really the most important aspect of the EU Energy Union for a country and how to measure the effect of one policy decision on the development of the entire concept.

The principle of the interconnection

As mentioned before the idea of the EU Energy Union policy is that the five dimensions are strongly interconnected. The concept itself is known and widely applied in numerous economic process (e.g. figure 1).

Figure 1. Interaction of economic development factors



S o u r c e : Spiridonovs, 2014.

Building the correlation matrix for the EU Energy Union concept the authors suppose that concerning *Energy security, solidarity and trust,* diversification of supply correlates with all the rest dimensions, facilitating market processes, potentially eliminating energy consumption by modelling an appropriate energy mix and using more environment-friendly energy sources. Diversification of such energy sources as gas, oil, uranium is an important precondition for the development of the member states and the entire EU. Southern Gas Corridor, Gas hubs in Northern Europe followed by Central and Eastern Europe and Mediterranean are important projects to spread the risk of potential supply disruptions. The liquefied natural gas market has also a considerable potential for further development (European Commission, 2016).

Security of supply (SoS) measures are an important tool to prepare and effectively deal with emergency situations. The instrument proposes to use, for example, capacity mechanisms as security, possibility to merge separate transactions in to collective agreements, transparency of commercial contracts, etc., therewith effecting market processes by lowering flexibility, but eliminating high-price risks for a particular region and risk of supply disruption (European Commission, 2016; Jirusek et al., 2015).

Moreover, the EU member states speaking one voice in the dialogue with the 3rd countries could provide new opportunities for more active participation in the global energy market processes (European Commission, 2016).

Regarding the *Internal Energy market*, infrastructure is a cornerstone facilitating all the rest dimensions of the Energy union. As energy interconnection projects are often not commercially justified, the EU financial support plays an important role in their realization (European Commission, 2016; Official Journal of the European Union, 2013).

The legal acts should be adjusted to practically ensure the sixth freedom of the EU: free flow of energy in the single EU market. There is still a range of issues to solve for full implementation of the 3rd energy package. In addition, the electricity market should be redesigned to become available to the market players from all the parts of the Energy union without barriers. Consumers should have all the tools to manage their consumption and bills for electricity. State aid policy should be cleverly managed avoiding over-subsidising of certain branches of energy sector making economy rely on fair competition and free market principles. Implementation of network codes plays an important role in tailoring the single market (European Commission, 2015).

Moderation of energy demand has a considerable impact on all the other dimensions by decreasing energy consumption. The national policies should be tailored to implement the energy efficiency targets. Ecodesign and energy labelling make everyday usage appliances more energy efficient by putting new production requirements to manufactures and educating consumers by labelling on appliances on energy consumption classes. Energy efficiency has a great potential also in other connected sectors of economy, such as building and transport, so the energy efficiency targets should be allocated respectively. Moreover, taking into account that the EU is energy importer, energy efficiency decreases energy consumption per produced unit and thus eliminates energy dependency from the 3rd countries (European Commission, 2016; Szulecki et al., 2016).

Ambitious *climate policy and decarbonisation of economy* is an integral part of Energy union. Under this direction, first of all, emissions trading schemes reform is needed as due to the economic crisis of 2008 surplus of emission allowances appeared, questioning the functioning of carbon market. RES are developing fast and technological progress is the main precondition for that. It is important to ensure that the RES support schemes are based on market princi-

ples and green energy is competitive in comparison to the one produced from fossil fuels (European Commission, 2016; Szulecki et al., 2016).

A vital element for all the described above dimensions and their instruments are *modern technologies*. Due to this, to ensure progress in development of Energy union making energy green, affordable, market-based, efficient and secure research and development is particularly highlighted in the newly developed policy. The Strategic Energy Technology plan covers projects aiming at developing low-carbon technologies and making them competitive (European Commission, 2016).

The research methodology and possible future applications

Despite the fact that there is theoretical proof of interconnections between the EU Energy Union dimensions, the practical correlations are yet to be determined. Table 1 summarizes the data on two dimensions: energy security and renewable energy, assuming that the renewable energy sources are domestically used, thus eliminating energy dependency form other countries.

Table 1. Correlation of the Energy Union dimensions

Top 10 European countries with lowest energy dependency	Top 10 European countries with highest share of renewable energy sources in the final consumption
Norway	**Iceland**
Estonia	**Norway**
Denmark	Latvia
Iceland	Sweden
Romania	**Montenegro**
Bosnia and Herzegovina	Austria
Kosovo (under United Nations Security Council Resolution 1244/99)	Finland
Serbia	Albania
Poland	**Denmark**
Montenegro	**Bosnia and Herzegovina**

S o u r c e : own study based on: Eurostat data (for 2014).

Table 1 demonstrates that there is no evident correlation between the dimensions: There are five of top 10 European countries with lowest energy dependency in the list of top 10 European countries with highest share of renewable energy sources in the final consumption, namely Norway, Denmark, Iceland, Bosnia and Herzegovina and Montenegro. That may mean that the leadership in one of the dimensions does not obligatory mean the leadership in the other due to a weak correlation between the dimensions in a given country.

In practice the described situation may lead to the following: the active political actions in the field of one dimension may not result in the desired progress in the other dimension. Due to this the correlations between the dimensions should be analysed case by case for the countries to get the best advice for the policy makers in certain situation, which actions may ensure the faster implementation of the entire concept of the EU Energy Union in the particular country.

The current paper reflects the showcase of Latvia performed by the authors aiming to estimate the strength of interlinkage between the dimensions and their instruments. Within the study the correlation matrix between the Energy Union related EU legal initiatives and the communications was developed (table 2). The authors have characterises the correlation among the 15 actions of the EU Energy Union strategy for Latvia in order to develop the general methodology for such evaluation.

The opinion expressed by the authors (subjective, only for the purpose of developing the general method), as well as analysis of the Energy Union related communications from the European Commission and the EU legal acts proposals, the following characteristics of the five dimensions of the Energy Union were formulated. The correlation estimations of the energy experts are summarised and reflected in table 2.

Table 2. Correlation matrix of Energy Union's dimensions and their instruments

Nr	Dimensions and Instruments	Security & Solidarity	Internal Market	Mode-ration of Demand	Decarbo--nization	R&I	Σ
1	2	3	4	5	6	7	8
I Security & Solidarity							
1.	Diversification of supply		1	1	1	1	4
2.	Security of Supply regulation		1	0	0	0	1
3.	Global markets		0	0	1	1	2
4.	Transparency		1	0	0	0	1
II Internal Energy Market							
5.	Infrastructure	1		1	1	1	4
6.	3rd Package, new electricity market design, state aid	1		1	1	0	3
7.	Building regional markets	1		1	1	1	4
8.	Consumer involvement	0		1	1	1	3
III Moderation of Demand							
9.	Energy Efficiency in national policies	1	1		1	1	4
10.	Ecodesign, Energy labelling	1	1		1	1	4
11.	Synergies between energy efficiency, resource efficien-cy, circular economy	1	1		1	1	4
12.	Building sector	0	1		1	1	3
13.	Transport sector	0	1		1	1	3
IV Decarbonization							
14.	ETS reform	0	0	1		1	2
15.	Technically advanced RES, biofuels, market-based schemes	0	1	1		1	3
V R & I		1	1	1	1		4

Source: own study.

In case the correlation between a certain instrument of a one dimension and another dimension could be identified, the matrix displays the value "1". In case no correlation between an instrument of a one dimension and another dimension could be identified, the matrix demonstrates the value "0". The column Nr.8 in the table 2 demonstrates the sum of the correlation values of an instrument of a certain dimension with all the rest 4 dimensions.

In order to estimate the level of correlation among the dimensions, taking into account the instruments they cover, the authors propose to use the following formula to calculate the Correlation index.

$$Ŭ = \frac{\sum_{i=1}^{n} D_{ni}}{4n} \quad (1)$$

Where:

Ŭ – Correlation index between Dimensions,

D – Implementing instrument of a Dimension,

n – Number of instruments to implement the targets of a Dimension.

With a help of formula 1 the values of correlation index for each dimension of the Energy union have been calculated, and the corresponding rank – estimated.

Table 3. Correlation index and rank of the Dimensions of the Energy union

Nr.	Dimensions	Correlation index (Ŭ)	Correlation rank
1.	Security & Solidarity	0.5	5
2.	Internal Energy Market	0.88	3
3.	Moderation of Demand	0.9	2
4.	Decarbonization	0.63	4
5.	R & I	1	1

S o u r c e : own study.

The table 3 shows that the correlation index of all the five dimensions ranges from 0.5 to 1, meaning that all of them are significantly mutually correlated. The highest value of index belongs to Research and Development and Modera-

tion of demand, following by Internal Energy Market, Decarbonisation and Security & Solidarity.

The outcome of the research process and conclusions

EU Energy Union is a strong tool with a high potential to change the situation in the energy sector of the entire European Union and each its member state. It is a complex solution acting in 5 different directions, which are considerably mutually correlated. The actions determined to reach the targets of a one dimension of the EU Energy Union strategy have also strong facilitating power for other dimensions.

However, in practice active political initiatives in the field of one dimension may not result in the desired progress in the other dimension. Due to this the correlations between the dimensions should be analysed case by case for the countries to identify which actions may lead to the faster implementation of the entire concept of the Energy Union in the particular country.

The next step for successful realization of the EU Energy Union strategy is thorough planning for implementation of each of the defined instruments. Taking into account that fact that usually competences for practical transposition of different actions (mostly in form of legal acts) falls under responsibility of different institutions (both – regional and national), it is important to ensure an excellent coordination and constant cross-checking to avoid decrease of potential synergies between the benefits provided by the five dimensions.

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