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Energy security management

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Energy security management

Abstract:

The article presents the process of managing energy security under national conditions. It presents the definitions of energy security and the impact of the planning process for its implementation. Shown dependencies clearly describe the impact on the economy of the State. Institutions involved and responsible for the security of energy are characterized. Their role in the process of safety management is defined and the model of management has been built.

Key words: Energy, management, energy security, energy policy

Introduction

Ensuring security is one of the most important areas of state activity. Due to the extension of conceptual security events and because of the strategic importance of the energy sector, a binding energy security category was given within economic security and located in the broad sense of security.

Energy markets and the global economy is subject to dynamic changes, so it is necessary to build long-term energy security strategy and effective management of the process to ensure stable economic development of a State.

The main role in this process accounts for the State, because security is a key in its task, one of its primary objectives and existing development priorities¹. This is what the States strive for, because of strategic reasons in the

¹ Kolenda Z., Siemek J., *Bezpieczeństwo energetyczne Państwa – Prawo, zarządzanie i marketing*. Wyższa Szkoła Handlowa w Krakowie, Kraków 2003

control of upstream energy, international energy trading, storage and production of fuels and energy. At the same time the States are trying to create a favorable legal and administrative framework, as well as the political climate and economic conditions in order to ensure and enhance energy security.

Managing energy security in a market economy is a necessity especially ensuring that security is an ongoing and a long-term process. Therefore, because of lack of energy and self-sufficiency in the majority of European countries, this process is international, and its effectiveness depends primarily on the ability to anticipate strategic decisions not only in response to the changing environment.

The concept of energy security

The word „security’ comes from the Latin word *securitas* (*sine cura* - without care)². A security situation is free from anxiety or fear giving confidence and guarantees its continuity.

Energy security is one of the fundamental concepts of energy management and is one of the major elements of energy policy. There are many definitions of security as it is possible to distinguish several aspects and meanings of the term, which are distinguished because of different criteria. One of the general definitions defines energy security as “*the availability of sufficient resources at an affordable price.*”³ Another defines it as “*the availability of energy adequate, affordable and reliable, which is necessary both in terms of technological development as well as human security perspective.*”⁴ However, according to the International Energy Agency (IEA) “*energy security, in practice, is best viewed as a problem of risk management, such as reducing the risk and consequences of disturbances to an acceptable level.*”⁵

² Kumaniecki K., *Słownik łacińsko-polski*, Warszawa 1997

³ D. Yergin, *Ensuring Energy Security*, Foreign Affairs, Vol.85, No.2, 2006, s.70-71.

⁴ F. Umbach, *Debates on Energy Security and Impacts on Germany’s 2007.EU Presidency* {w:} M. Antonio, *Energy Security. Visions from Asia and Europe*, Basingstoke, Palgrave Macmillan, New York 2008, s. 1-23.

⁵ IEA, *World Energy Outlook 2007*, Paris 2007, IEA, s.161.

State of energy security may properly be described as continuous access to energy in various forms, in sufficient quantities and at a reasonable price, because the primary entity concerned is the consumer (customer energy). In a broader sense, this definition could be complemented by environmental and human rights adding to the restrictions that could emerge, (...) while taking into account issues related to environmental protection and respect for human rights during the extraction and exploitation of natural resources.

In Poland, the definition of energy security is presented in the Energy Law Act⁶: *energy security - the state of the economy enables to cover prospective demand for fuel and energy, technically and economically viable, meeting the requirements of environmental protection.* In fact, all of the above definitions express the idea of energy security, however, particularly the definition presented in the Energy Law Act was met with widespread criticism.⁷

The process of managing energy security

Ensuring energy security is a continuous and long-lasting process which is taking place in a dynamically changing environment. Therefore it requires an appropriate strategic approach to decision making and effective management of the entire process. Due to the lack of energy self-sufficiency in the majority of European countries, this process is international, and its effectiveness depends primarily on the ability to make strategic decisions and to anticipate future problems not only in response to the changing environment. Managing energy security in a market economy - as already mentioned - is therefore a necessity:

⁶ Ustawa z dnia 10 kwietnia 1997 r. *Prawo energetyczne* (Dz.U. z 2006 r. N 89, poz 625 z późn. zm.)

⁷ por. Bojarski W., *Bezpieczeństwo energetyczne*, „Wokół Energetyki” – czerwiec 2004 ; Popczyk J., *Zarządzanie bezpieczeństwem energetycznym kraju w warunkach rynkowych*, Materiały XI konferencji – Rynek energii elektrycznej: Bezpieczeństwo energetyczne polski w strukturze Unii Europejskiej, Tom I, Lublin 2005 s.15

Energy security is not a one-time act of will and must be a long-term process to build the market, ensuring the safety of the cost internalization⁸, a key factor is the division of responsibility⁹. But there are many contentious issues on which this division of responsibilities should be based. Some authors turn to the market mechanisms¹⁰ and others on the contrary say that the reduction of state control and regulation as well as the introduction of the free market in this area is devoid of any logic and content-related reasons¹¹.

So what is the management of energy security? According to one of the definitions the management is an activity consisting of managers setting goals and causing their implementation in organizations reporting to management on the basis of ownership of the means of production or disposal of them¹², and another defines a set of management functions¹³.

We can say that energy security management is the activity of determining strategic goals and causing their implementation by relevant organizing, coordinating by the use of the subsystem management, resource processes and information in order to ensure safety. Managing energy security includes the following management functions: planning, organizing, coordinating, supervising and controlling (monitoring) energy security.

It seems that a proper look at the entire process of managing energy security, requires consideration of a systematic approach, and then a construction of the model - according to the author. According to a common definition of the system, it is defined as a set of components, among which there are relations (interactions), and wherein each component is connected to each other

⁸ Popczyk J., op.cit. s. 13

⁹ Por. Popczyk J., op.cit. s. 30 ; *Doktryna zarządzania bezpieczeństwem energetycznym* . Ministerstwo Gospodarki i Pracy, Warszawa, maj 2004. *Polityka energetyczna polski do 2025 roku*, Rada Ministrów 4 stycznia 2005 roku, Warszawa 2005 ; *Polityka energetyczna polski do 2030*. Załącznik do uchwały nr 202/2009 Rady Ministrów z dnia 10 listopada 2009 r., Warszawa 2009

¹⁰ Popczyk J., op.cit. s.26-32

¹¹ Bojarski W., op.cit.

¹² *Encyklopedii Organizacji i Zarządzania*), Państwowe Wydawnictwa. Ekonomiczne, 1981

¹³ Koźmiński A., Piotrowski W., *Zarządzanie – Teoria i praktyka*, PWN, Warszawa 1995, s.88.

directly or indirectly¹⁴. However, the concept of a model is meant as a relatively isolated system, possibly not too complicated, acting similarly to the original¹⁵. The system models that are multi-dimensional and multi-faceted intentional simplifications are the recognized test objects, phenomena and processes in their complexity and dynamics of the interrelationship¹⁶.

This approach is examining the process of managing global energy security, and all its elements and properties should be shown the cause-effect relationships and internal relationships and interactions with the environment.

A constructed model (fig. 1) shows the process of national conditions, it is based on three dimensions of energy security: subject, object and space. Additionally, you can take into account the aspect of time, highlighting three of its horizons: short-term, medium-term and long-term (for safety). This model shows the process of managing interactions with the environment, input, output and energy security management functions being represented.

¹⁴ Ackoff R.L., *O systemie pojęć systemowych*, „Prakseologia” Nr 2, 1973. S. 25 za: Koźmiński A., Piotrowski W., *Zarządzanie – Teoria i praktyka*, PWN, Warszawa 1995 s.521

¹⁵ Słownik wyrazów obcych PWN, Warszawa 1972, s. 49

¹⁶ Koźmiński A., *Ujęcie systemowe*, [w:] *Współczesne teorie organizacji*, PWN, Warszawa 1983, s.83

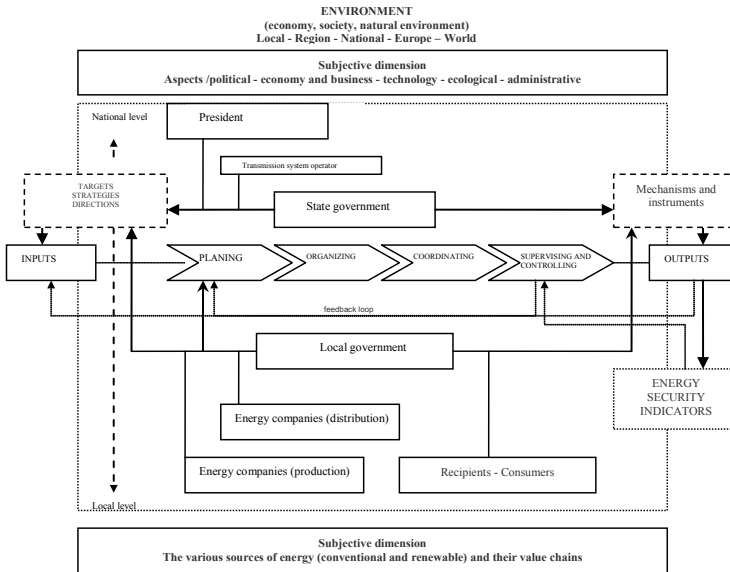


Fig. 1. Energy security management model
Source: own study

The division of competences and responsibilities in the management model energy security and management functions

The energy security management model is an included division of competencies and responsibilities resulting from existing legislation, energy policy and other analysis¹⁷. These duties determine the model management functions performed by relevant actors in the field of energy security.

¹⁷ See: Ustawa z dnia 10 kwietnia 1997 r. *Prawo energetyczne* (Dz.U. z 2006 r. N 89, poz 625 z późn. zm.) ; *Polityka energetyczna polski do roku 2025, op.cit.* ; *Polityki energetycznej polski do roku 2030. op.cit.* ; *Doktryny zarządzania bezpieczeństwem energetycznym. op.cit.* ; Popczyk J., op.cit ; Bojarski W., op.cit, Kaliski M., Staśko D., *Bezpieczeństwo energetyczne w gospodarce paliwowej polski*. Studia rozprawy monografie 138, Wydawnictwo IGSMIE PAN, Kraków 2006

The division of responsibilities in the subjective dimensions

The division of responsibilities and competencies of subjective means is clear from the provisions of the Polish Constitution. One of the responsibilities of the state is to ensure the safety of citizens and the environment, based on the principle of sustainable development. The state is thus a basic entity responsible for energy security.

This shows that it is this obligation which will be important in the first place and in very general terms, involving the creating and monitoring of policies, responsibilities of the President of the State and the Council of Ministers. The President performs his tasks with the help of the National Security Bureau, whose tasks include the ability to act in the field of energy security, which is one of the basic components of a broad-based national security⁶. However, the competence of the Council of Ministers on energy security focuses on making strategic actions. These actions relate to the overall principles of the functioning of the energy sector as a strategic sector of the economy and to the leadership role of the government and the local supervisory authorities, relating to the duties of these entities in the energy sphere.

As indicated in art. 12th of the Energy Law Act, the supreme institution of government administration competent in matters of energy policy and energy security is the minister responsible for the economy (Ministry of Economy). According to the Energy Law and the Energy Policy in force until 2030, this obligation is also implemented by the relevant government authorities and local governments, through the imposition of obligations on entities such as:

- The Energy Regulatory Office (URE).
- The Ministry of the Treasury.
- The Office of Competition and Consumer Protection.
- Province Government
- Community Government.

Obligations on energy policy and also in terms of energy security also apply to:

- Energy companies engaged in the transmission or distribution of gas or

electricity.

- Energy companies engaged in the production of electricity (with a total installed capacity of not less than 50 MW).
- the transmission system operator.

Also, do not forget recipients (consumers) who, of course, are key players concerning energy security.

The division of competences and responsibilities in the management model energy security and management functions

Duties imposed on individual entities determine their responsibilities and commitment involved in various management functions described in the management model energy security. Table 1 shows the distribution of competencies proposed by the author. Table 2 and 3 shows the division of responsibility for energy security as a function of area and time.

Tab. 1. The competence of actors and energy security management functions

	planning	organizing	coordinating	supervising and controlling (monitoring)
State Government	+++	+++	+++	+++
Local Government	+++	++	++	+++
Energy companies (distribution of gas or electricity)	++	+	+	+
Energy companies (production of electricity)	++	+		
Transmission system operator	+++	+++	+++	+++
Recipients	+	+		

Legend:

- + low level of competencies
- ++ medium level of competencies
- +++ high level of competencies

Source: own study

The greatest competence in all phases of managing energy security has been imposed on the State and relevant bodies, both central and local governments. In terms of time, the State is particularly responsible for the short term and long term, and considering spatial concerns the responsibility of government (national, EU), local government (local and regional).

Competent system in a fairly wide range (in terms of management functions) must also have a transmission system operator and to a lesser extent, distribution system operators operating locally. It lies with them to ensure security of supply and reliability, in fact in every aspect of time and space.

Other players which should ensure the safety of energy are the companies producing energy and fuel. On them were imposed mainly planning responsibilities (for generating electricity), with notification of planned projects (modernization, expansion, construction of new sources). Such obligations should be imposed on refining and gas companies. All of these entities operate in market conditions. Their decisions must have a business base, so that it is necessary to develop mechanisms for joint ventures by the State and private entities, such as the formulation of public-private partnerships in which there is a threat to energy security of this type of investment (such a mechanism and obligations imposed on URE).

Also, do not forget recipients (consumers) who, of course, are important players concerning energy security. Recipients also should ensure the energy security through the conclusion of bilateral and appropriate forms of insurance (especially customers operating under TPA).

Tab. 2. Division of responsibility for energy security in an area function

	Local	Regional	National	European/ international
State Government	+	+	+++	++
Local Government	+++	+		
Energy companies (distribution of gas or electricity)	+++	+++	+	+
Energy companies (production of energy)	+++	+++	+++	+++

Transmission system operator	+++	+++	+++	++
Recipients	+++	++		

+ low level of responsibility

++ medium level of responsibility

+++ high level of responsibility

Source: authors own study based on: *Popczyk J., op.cit.; Doktryna ... op.cit. Polityka energetyczna polski do 2025 roku, op.cit., , Polityka energetyczna polski do 2030. op.cit*

Tab. 3. Division of responsibility for energy security in a time function

	Short-term	Medium-term	Long-term
State	+++	+	+++
Energy companies (distribution of gas or electricity)	+++	++	++
Energy companies (production of energy)	+	+	+++
Transmission system operator	+++	++	++
Odbiorcy	+	+	

+ low level of responsibility

++ medium level of responsibility

+++ high level of responsibility

Source: own study based on: *Popczyk J., op.cit.; Doktryna ... op.cit. ; Polityka energetyczna polski do 2025 roku, op.cit., ; Polityka energetyczna polski do 2030. op.cit*

The significance of the planning function in the management of energy security

The management of energy security is a very important stage in planning, as the implementation of the project for improving security requires long-term activities related to the implementation of time-consuming and capital-intensive infrastructure projects related to the construction of the network (transmission, distribution, pipelines, etc.) and generating the necessary installations. In addition, the implementation of this type of energy investment in a strategic area for each country affects the economic development of the

country, so it requires the use of management strategies taking into account relevant aspects of energy, and also environmental and social factors. Planning must also take into account the context of ensuring the availability of energy resources, because without them access to the most developed infrastructure does not provide security.

It is also necessary to ensure operational safety, revealing a short-term skill and ability to respond quickly to sudden energy changes in the system of supply and the demand for energy. The importance of an appropriate strategy also underlines in its definition of security A. Monaghan, according to whom, the security of energy is conditioned by strategic planning, focused on fuel diversification, resource efficiency and flexibility in the energy sector¹⁸.

Conclusion

Energy security is one of the most important areas of activity of the State. Formulation of energy policy in the EU in terms of energy security of a State is no longer fully autonomous. It has an impact on a variety of subjects, in the international, national or local range. In particular, it must be adapted to the European energy policy - in which you can also see a focus on the issue of energy security. Constructed models show that the diversification of the responsibility for energy security is the right idea. However, a clear division of competencies and a high level of coordination is required.

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¹⁸ A. Mongahan, Russian Oil and EU Energy Security, Russian Series 05/65, Conflict Studies Research Centre, 2005, s.2.

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