№ 4 (3), 2021 ISSN: 2682 – 9517 (print) ISSN: 2683 – 0930 (online)
INSTITUTE OF INFORMATICS AND INNOVATIVE TECHNOLOGIES

MANAGEMENT OF THE INFORMATION RESOURCE IN THE ENERGY SYSTEM

Anatoly Andreev

University of National and World Economy, Sofia, Bulgaria.
andreevanatoly@gmail.com

Abstract. **The object of the article is an energy system, and the specific subject of research is the management of its information resource. The essence of the researched and I have tried to analyze the content of the problems, solutions and perspectives of the energy system of the Republic of Bulgaria from the point of view of the management of its information resours. The impact of the information, as well as its management, on information threats and methodly for ensuring information security of the energy system is characterized. The purpose of this article is to consider the challenges and solutions in terms of adapting and integrating the energy system to new realities. The interrelation in methodology and management of the information resours and information security is presented with an emphasis on the threats to the energy system. The planned with an emplemented measures for optimizing the mechanisms for counteracting hacker attacks in recent years. The conceptual framework of efforts and at the level of national policies to address the difficulties posed by these threats is outlined. A justification of the contribution to the implementation and use of the information resours for the development of the energy system of the Republik of Bulgaria has been made.**

Keywords: management , information, information resours, information security, energy system, national polic

INTRODUCTION

In modern conditions, the energy system is facing radically new challendes, both in view of the shocks and transformations to which world markets have been subjected in recenr years, and due to the difficulties generated in adapting the sector to opportunities and risks of entering the digital age. Given that every step in modern production and lifestyle is directly or indirectly linked to energy, its role is essential in terms of supporting industrial and cooercial processes, transport, communications, etc... Access to energy resourses is crucial for the socio-economic development of each country and for the living standard of its population. Trends in the development of world energy undoubtedly bring this topic back to the attention of political and social discussions. The basis of the development of the energy system is the application and integration of information and in particularis related to the management of its information resource, giving increasing emphasis to the economy in the energy sector.

When we focus on information management, and in our case on the management of information resources of an energy system, we must keep in mind that the management of information / information resources of a system (in our case: energy system of macroeconomic level) is related to control, protection and management of the system through information security.

Historially, looking at the recent past, it is clear thet the problems of the problems of the energy system are neglected in terms of information resource management and its connection with information security in scientific and research terms. Over the years, the economic development of the energy system has been influenced by the ups and downs of interest in energy, which are caused during the twentieth century by a number of changes in the world economy directly related to various energy factors and mainly due to lack of use and management of information for the purposes of the energy system. And realistically, in the world of energy system. And realistically, in the world of energy in the last 50 years, in the pursuit of development, the nature of its problems is changing. For example, these are the oil crises of the 70s, which provoke a wave of serious research on the risks to

economic growth and prosperity in view of a possible shortage of energy and other resources. Academic interest in the energy system in the 1980s was determined by incidents in the field of nuclear energy, Increased public attention to the problems caused by environmental pollution, and in particular to global warming and climate change, in turn caused the second big wave in energy research in the early 1990s. The first decade of the 21st century is marked by the transition to peak energy concepts, which increasingly present pessimistic scenarios towards the impending depletion of limited hydrocarbons and the approaching end of the fossil fuel era.

In view of what has been said so far and in view of current scientific trends in the energy sector, we can define the second decade of this century as one thate will be marked by the application of information technology in the development of the energy sector and the epphasis in the energy sector will be dealing with the problems and challenges facing the management of the information resoursce of the energy system.

Information resource management. To understand the essence of the topic it is necessary to get acquainted with the essence and definition of categories of terms:

Information (from Latin: informatio – explanation, exposition, awareness) is a concept related to the objective propertu of material objects and phenomena (processes) to generate a variety of states that can transmit to other objects though interactions and be sealed in their structure. Information is available, usable knowledge, but there is no single definition, but there is a relativery wide range of meanings in different fields of knowledge [1].

Resourses are the main factor of production. They include natural or raw materials, materials, finance, labor and energy. In modern times, another component is added (included). These are the information resources. They belong to intangible resources. Over time, their importance is growing and this fact confirms that the information is already a product (commodity), which has value and is Increasingly sought after and used in a given area. From an economic point of view, in almost all cases the information product is realized (sold) in the from of a service.

Therefore, from what has been considered so far, we can conclude that the information product is the result of a person's intellectual activity. And due to this fact, the ability improve himself, the information product, as a result of human labor over time will get better and better indicators, ie the information resource is inexhaustible.

An information resource is an information product when the information as a resource has undergone a resource has undergone a certain type/s of processing (transformation) and has accordingly reached the level of realization (application).

The information resource afrer its transformation into a product has the ability to be reproduced based on the professional and social needs of the industry in which it is intended.

Information resources such as knowledge have been accumulated by human society throughout the history of its development. The knowledge gained over time by people can also be called experience and when it is in a professional direction it is a professional experience. Human knowledde is constantly enriched, and from there her professional experience is constantly increasing. In terms of information resources, professional experience is considered expertise. Profesional expertise, in turn, is classified into different levels of expertise, depending on the sum and category of professional qualities that the expert needs to possess.

Information resources in the from of: knowledge are alienated from the people who created it, accumulated it, analyzed it, summarized it and used it by the whole society, materialized in the from of documents, databases, knowledge bases, in science, documents and arrays of documents in information systems, information resources as information [2].

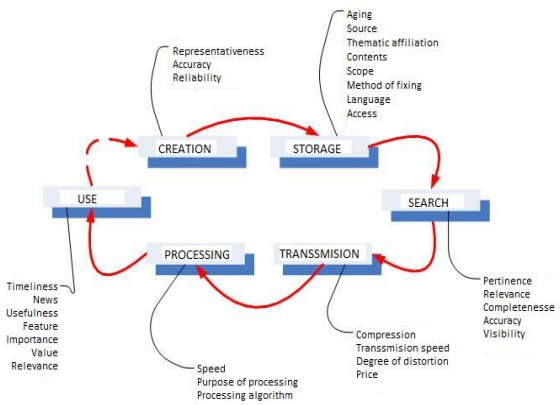

Figure 1. STAGES IN FORMATION OF INFORMATION RESOURCES.

When considering the Information Resources, different stages in the process of their formation stand out. And they are: creation, storage, search, transmission, processing and use (Shown in Figure 1)

The information resources contain: Primary information – is expressed in the information acquired in its primary from. The information contains both qualitative and quantitative indicators: Secondary information – this includes processing of the acquired primary information, as well as its classification, analysis and storage.

Information resources are also considered a strategic resource.

The management of organizations is often viewed from the standpoint of the resource approach. According to this approach, the main task of mamagement is to attract, allocate and control the resources of the organization [2].

Today, the time index of information is increasingly taken info account. Having a constantly changing business environment requires quick and adequate decisions. Information is the tool that can either shorten or increase it.

Information management as related to the information management as related to the information resource deals with many different (series) activities in the organization, enterprise: organization and construction of information infrastructure, information creation, demand, system management and acquisition of information from one or more sources. In large organizations, the expert (director) responsible for information and information resources is called Chief Information Director [3].

Information management inovolves various informationa (IT) experts, scientists, organizations, including those responsible for quality assurance, ease of access to information, accuracy of acquired and provided information. Also the specialists who are responsible for the proprer storage of information. As well as those who have information that they provide in different ways – sites and others, and the users of this information [3].

And let's look at the difference between the concepts of information management and information management – they differ in scope. Information management is a discipline that deals with all concepts related to the topic of information and its management. Information management is closely relalitrd to the processes of data management, systems, technologies, processes and where the avalibility of information is critical to organized the strategy of the organization [3].

And generally speaking, the gunction of information resource management is reduced to the activity of information resource management and control.

Information resources are in direct interaction with information security.

Amd in turn, information security is the practice of protecting information, information networks and information systems against human error, natural disasters, technical malfunctions or maliciours attacs [4].

Energy system information resource management.

Energy is a fundamental branch of the national economy. The economic condition of the national economy and the living standart of the population completely depend on the condition of the energy system it the country and its development. In respect years, the economic instability in our country is largely due to political, economic, social and other problems and lack of sectoral strategy for the development of the energy system. The system is sonstantly striving in search of different ways to survive.

In traditional understandings, the energy system is viewed from different points of view, activities and interests, but their interconnection, interaction and interdependence are not always assessed. At the same time, components are omitted or underestimated, which in a given situation – political, economic, social and other, can have a significant impact on the sectoral development of energy, as well as on the development of the national economy and the welfare of the population.

In the present and with a view to the future, a new opportunity opens up in the recovery and economic development of the energy sector. This can be a fact by properly managing the information resource of the energy system. With his doctrine he brings out and arranges in a sustainable multi-component system, which is the basis of information security, which in turn is an element of energy security, and it is an integral part of national security. This fact generates new views in determining the security of the energy system. It is the subject of a different debate on the dimensions related to the use of information and communication technologies in the energy system.

The energy system and its condition is under a constant scope of national security, which is a sign that its management is a response to statehood in a given region, country. As is already implied, the use of information and, more precisely, the information resource in the energy sector takes the responsibility and full responsibility for energy security. The specific for the information resource of the energy system is that it is focused on information and information flows to/in the energy sector. Ie this is the whole spectrum and array of information related to and related to the sectoral development of energy at regional, national and international level. As in other industred, the information resource is vital for the development of the energy sector. In reality, though its management the unification of the real processes and technologies in the energy system with the information tehnologies is relalized. The use of information as a resource for the purposes of the energy system is applies. In the information networks of the energy system there is an exchange of information in the from of information flows, different in type, content and volume. As a prerequisite for them to function in the interest of the energy system. Also, the information resource of the energy system must be purposefully at the service of citizens and society. The availability and accessibility of accurate and timely information related to energy services is essential for the development of the energy services market and for the prosperity of its participants. It has the role of a resource with a very strond influence on the efficiency of the energy system.

As already mentioned, the information resource of the energy system is multicomponent and is built as a system macro framework, including a wide variety of components. We will look at some of the with the most essential importance, and these are the following components:

- Role of the state in the application and use of the information resource of the energy system;
- Application of the information resource in energy standardization and regulation of the energy system;
- Use of the information resource when calculating the energy mix;
- Use of the information resource in structuring the energy system;
- Use of the information resource in energy supply;
- Use of the information resource for rational use of energy. It is associated with the desire to increase the efficiency and effectiveness of the energy system;
- Use of the information resource for staffing of the energy system and raising the qualification of the employees in it;
- Use of the information resource for science, technologies and innovations for development of the energy system;
- Use of the information resource to protect the interest of producers, traders and consumers;
- Use of the information resource to ensure energy security;
- Use of the information resource for increasing the energy independence of the country;
- Use of the information resource for environmental friendliness of the energy system;

Each of these components has a relative independence, but as a whole is an element of a common chain of information resources of the energy system. The system macroframe for the components specifies subsystem elements with appropriate content and method of application in the energy system.

What is the situation in our country – Republic of Bulgaria? As is already known, the information resources of the energy system with the scope of the information system of the energy system, and it in the scope of information security. The information security of the energy system in the Republic of Bulgaria is approved by the Law on Cybersecurity. According to the law, the Republic of Bulgaria pursues a unified national cyber security policy, in accordance with the strategies and policies of the European Union and NATO. It is expressed in the protection of the critical communication and information infrastructure and the ability of citizens, businesses, state and public institutions to exchange and process electronic information freely and reliably [5].

The Republic of Bulgaria is part of the global process of increasing digital dependence and the

trend of increasing, complicating and increasingly difficult to predict the threats in the information security of the energy system. The irreversible transfer of the main activities of the Bulgarian society, business and state functions in the information computer space poses a number of challenges and the need for urgent actions in the system:

- Need for a common vision for strategic development and achieving cyber sustainability of the whole society, national strategy and policies for cyber security and sustainability;
- Pooling of capacities and capabilities, involving all stakeholders (government bodies, business, academic and non-governmental organizations), identification and development of capabilities to deal with new trends and threats;
- Providing the necessary organizational, technical, financial and human resources and mechanisms for actions to monitor the state of communication and information systems and cyberspace, response and reduction of the impact of cyber threams and cyber attacks, as well as their recovery;
- Periodic review and assessment of risks and threats and improvement of coordinated protection measures;
- Improving the legal framework and regulatory mechanisms for the implementation of the strategy and national policies;
- A balanced approach between preserving freedom and openness on the internet and cyberspace and ensuring reliability and security for citizens and businesses – a global challenge that requires cooperation with relevant international partners and organizations;
- Defining clear and adapted to the dynamics of threats in cyberspace commitments of owners and operators of critical infrastructure, as well as internet service providers and connectivity to the security of the and customer;
- Compensating for the relative backwardness of NATO and EU countries in cyber security activities, achieving a basic level of ciber security and gradual accelerated development to cyber resilience of the whole society and full integration into the common system of the EU and NATO [6].

An example of poor management of the information resource of an energy system at a global level is the current situation with Kovid – 19 and the effect on the energy system. As a result of the pandemic, there is a decrease in the growth of demand for energy raw materials and products and, accordingly, as a result of its exit and one of the main reasons for increasing demand for the same and hence increasing economic recovery. In this case, the pandemic is a factor and prerequisite for the state of energy and hence the economy. And in fact, this fact has an impact on ensuring energy security. Awareness of the forecasts of the movement of demand for energy resources in such a situation on the one hand is a major prerequisite for what happened. In order to prevent such negative effects of energy, it is necessary to deepen the study of the impact and interrelationship of awareness and coordination of energy security with health security. In addition, I will add the statement of the health security expert Assoc. Prof. Krassimir Koev: "A pandemic can bring economies and bring economies and nations to their knees." [7]. Koev further states that "The spheres and industries that must function during the pandemic are:..Energy -must work at 100%"[7].

These statements of Koev confirm my opinion that the energy sector, along with healthcare, are strategic industries and are the basis of human existence.

Status and problems with management of information resources of the Republic of Bulgaria. The problems are obvious at first glance. The simplest indication can be said, by conducting an information survey in the country with a question to the citizens, about the trust of the citizens in the mamagement of the energy system in our country. The result of the survey will obviously not be in favor of the government. Or even a statistical review of information on the price of electricity for 1Kw/h v years.

I will mention some of the problems with the management of information resources in our country:

- Extreme insufficientcy of experts (specialists) in the field of energy system at any level;
- There is a lack of coordination and management of sufficient information and information resources at all levels of the

energy system. For example, consumers are not aware of the basis on which 1Kw/h of electicity is calculated and the actual costs to the consumer. Information on what formula is used to calculate the cost of 1Kw/h energy. There is a lack of exchange of information between end users and energy traders in the preparation of energy saving certificates;

- There is no full use of the information resource;
- Insufficient control and regulation of information regulation of information resources;
- It is necessary to increase the flow of information to end users in order to raise their awarenes in the field of energy efficiency legislation. A program is proposed for more targeted training or informing of their leaders both by the administrations and by the non-governmental organizations;

Road to the development of the energy sector.

Beyond the efforts of the academic community, the political sector is also triving to find an adequate response in order to adapt to new realities. Improving the situation regarding the management and coordination (sharing) of information resources is undoubtedly of strategic importance not only for the energy system, but also for the national economy. In this regard, in my opinion, there is a need to establish a public-private partnership and strngthen cooperation on the management of the information resource of the energy system between science, business and the state. To this end, it is necessary to move towards creating a new direction of management and structuring of the information resources of the energy system as a singlr information platform of the energy sector with clear:

- Goals and objectives;
- Structure;
- Incoming information flows;
- Information arrays;
- Approaches to information processing;
- Outgoing information flows by user groups;
- Transparency of information resources;
- Rules for access by types of users and for data protection;
- Use of modern information trchnologies for simple and fast access to the desired energy service;
- Others;

CONCLUSION

The sustainable medium and long-term development of the energy sector and the energy system we are considering must be realized with the national energy doctrine, based on strengthening the use of information resources for the energy sector goals, as well as proper management. The Republic of Bulgaria should protect its national interest and realize a fair energy, ecological and social transition through the management of information resources. Our country has potential, geostrategic position, as well as a prerequisite for energy leadership through information resource management.

As we can see, the information with its resource has become decisive for our way of life and our well-being.

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