

ENERGY SECURITY AT THE CORPORATE LEVEL

Radislav Jovicic¹

¹ Security Research Center, Street Sinise Mijatovica 9, Banja Luka, Republic of Srpska,
Bosnia and Herzegovina, radja21@hotmail.com

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Abstract: *Modern society, regardless of how aware we are of it, is completely dependent on energy, more precisely on access to sufficient amounts of energy. Today, it is impossible to imagine a modern man functioning for a single day without energy and energy sources - to come to work or university without means of transport; to stay or work in premises without heating, cooling and lighting; to store food and drinks; to carry out private or business communication; functioning of health and financial institutions. Disruptions in energy supply in the past, as well as the last one caused by the conflict in Ukraine, showed not only the great society dependence on energy and energy sources, but also the mutual connection and dependence of international subjects in the field of supply in order to ensure the necessary amount of energy sources. The availability of the required amount of energy, obtained from own or other sources, is the basis for the functioning of the state's economy, while the price of energy significantly affects the price of the final product and the competitiveness of the economy. Instability of energy supply at the corporate level can arise from various factors including geopolitical tensions, natural disasters, fluctuations in energy prices on the market.*

Key words: *energy security, corporation, energy, society, energy supplying*

1. INTRODUCTION

The term corporate security is related to the so-called the "epoch of corporate capitalism" where the state's economy was transformed from a system of companies that freely competed with each other into a system dominated by a relatively small number of large corporations owned by numerous shareholders. The second important determining factor of corporate security is that it is not binded to the state, sovereignty and territory, but to interest, necessity, feeling and identity as integrating characteristics of groups, societies and organizations. The main goal of corporate security is the security of business success accomplished by eliminating all risks and threats which can affect business activities and the achievement of business success, then reducing the threatening effects to the minimal possible extent and business functioning in crisis conditions, overcoming crises and normal dealings. Asymmetrical threats endanger the corporation's work and increase uncertainty in every business segment, particularly the security segment. The focus is being directed towards identification, evaluation and management of risk as well as implementing corporate security. Critical infrastructure is mostly seen in the energy sector. Facts that demonstrate that are:

- the majority of companies engaged in the production, transportation, processing or sale of energy sources are in most cases state-owned or majority state-owned;
- energy sources, the transition of energy sources or produced energy across the territory of an international entity, as well as the safe supply of energy in crisis situations are determined by national security policies;
- corporations of firms that are majority owners of individual sectors working with energy and energy sources have close coordination when it comes to security and defense measures as well as protection of energy and energy sources.

In view of the previously stated, one can sense the importance of energy and energy sources, that is, the importance of energy security for the stable functioning of society (in a sociological and political sense).

Defining energy security and recognizing its importance from the international subject level - state to the corporate level is the first and most important step in solving this issue. Regardless of the fact that energy security is no longer just an economic category and that energy products are often used as a means to achieve foreign policy goals, energy security has: infrastructure that needs to be identified and protected, sources of threats that need to be recognized and assessed, and the protection system and subjects that need to be organized, all of that in order to protect national interests, whether it concerns the state level or the interests that a corporation should achieve at its level without violating the national interests of the international subject, that is, the state.

There are many factors that affect the energy security of both countries and corporations: geographical location, size, natural resources, economy, politics, culture, technology and many others. Each factor individually and/or in relation to each other contributes positively or negatively to energy security. While some of the mentioned factors are constant (or difficult to change), others can be influenced by systemic approaches. For example, a change in policy can lead to binding to one source and/or supplier of energy sources, or influence the diversification of sources and directions of energy supply, in order to avoid economic dependence. Dependence on one source and/or supplier of energy puts the corporation in a vulnerable position in the event of supply disruptions. Disruptions in supply can be caused by infrastructural difficulties and accidents, but they can also be caused by deliberate action, motivated politically, security-wise or economically. Suppliers who have a monopoly can use their position to obtain additional economic concessions from the corporation where they have a monopoly.

Asymmetric threats pose a risk for the work of the corporation and increase uncertainty in every business segment, especially in the security segment. Attention is increasingly focused on identifying, assessing and managing risks as well as implementing corporate security.

Through an analysis of available data sources in this field, this paper should, examine the position, significance, and role of energy security at the corporate level, and provide answers to some of the questions posed.

2. DEFINING THE CONCEPT OF ENERGY SECURITY

The phrase „energy security“ contains two concepts - energy (adjective: energetic) and security.

Energetics comes from the Greek word "ενεργεια" and implies a part of mechanics that studies the transmission and reversal of energy, that is, the economic utilization of available forces. From a philosophical standpoint, it is a view of the world where everything that exists and

everything that happens is reduced to energy, which appears in different forms (Simic & Gostimirovic, 2017). In the economic sense, energy is "a set of economic activities by means of which primary sources of energy are explored and produced, then transformed, transmitted and distributed to consumers and rationally used as primary or secondary energy" (Djajic, 2011).

The term security comes from the Greek word "σφάλω", which means error, decay, defeat, or its negation "άσφαλο" which means secure. The second expression comes from the Latin "sine cura", and means the negation of trouble, that is, concern. From this basis, the English term "security" was derived, which means the feeling or state of freedom from threat. The concept of security in the Russian language is "безопасность" and means the absence of danger, protection from possible harm, and it is similar in French (*sécurité*), Italian (*sicurezza*) and German (*sicherheit*) (Simic, S & Gostimirovic, 2017). The military lexicon defines security as a state (protection of an asset, assets, society), organization (security services with appropriate capacities) and function (an inseparable attribute of the state regardless of the organization) (Ratkovic, 1981). According to aforementioned, "security generally implies the unhindered (unorganized and/or organized, planned and/or spontaneous) achievement, protection, development and enjoyment of reference values and interests, the absence of dangers that would call this into question (protection and harmlessness), and the absence of fear that it will happen (peace of mind, safety), as a product of predictability, certainty and organizational-functional abilities to control the development of phenomena that are constructive or destructive according to reference values and interests" (Mijalkovic, 2009).

According to one of the definitions, energy security includes a wide range of complex and diverse (geo)political, economic, security, military, and technological trends which is why it is often explained using compound or adaptable terms, with a focus on the words energy and security (Bajagic, 2012).

When defining the concept of energy security, it is necessary to address several key questions:

1. Whose security is being considered (the energy sector or the energy system);
2. What is security being considered for (the reference subject or object);
3. Security from whom/what (sources of threats to protected values);
4. Who will provide security (forces and resources) and
5. How will security be achieved (methods and activities) (Simic & Gostimirovic, 2017)?

Considering the aforementioned, countries view energy security from the perspective of an international subject. The United States, through its Homeland Security Act, places emphasis on critical infrastructure in its definition of energy security. The Energy Strategy of the Russian Federation contains a definition formulated as follows "energy security is the state of protection of the country, its citizens, society, state and economy by the safe supply of the required amounts of fuel and energy", i.e. "full and safe provision of energy resources to the population and the economy at affordable prices and, at the same time, stimulating energy savings, minimizing risks and eliminating threats to the country's energy reserves". The European Commission defines energy security as the uninterrupted physical availability of energy resources in the market at prices that are affordable for all consumers (private and industrial).

The *Safety Culture* portal lists the four A's of energy security - Availability, Accessibility, Acceptability and Affordability (Safety Culture, August 21, 2023) as key elements of energy security. We find the mentioned elements or some of them in almost all definitions.



Figure 1. The 4 A's of Energy Security

Source: <https://safetyculture.com/topics/energy-security/>

Some authors believe that energy security appears as a subtype of ecological security, that is, by reducing the concept of energy security only to the availability of energy sources, stable deliveries in sufficient quantity and at acceptable prices, the definition narrows, and energy security is defined as a subtype of national security (Nadic, 2010).

For the purposes of this paper, we will utilize the definition that describes "energy security as a condition in which an international subject, the international community, or all its citizens have access to an adequate supply of energy at reasonable prices in the global market, free from challenges, risks, and threats that could result in disruptions in the supply of energy resources and energy" (Simic & Gostimirovic 2017).

3. DEPENDENCE OF THE CORPORATE LEVEL ON ENERGY SECURITY

The instability of energy supply at the corporate level represents a significant challenge for modern corporations. This instability can arise from a variety of factors, including geopolitical tensions, natural disasters, energy price fluctuations and supply chain disruptions. In order to identify energy challenges at the corporate level, corporations rely on research, analysis and expertise in the field of energy and energy supply.

In summary, the instability of energy supply represents a significant challenge for corporations. Identification of these challenges requires a multidisciplinary approach, which includes research in the field of energy, business strategy and geopolitics.

These are some of the key geopolitical factors and their impact on energy security:

Politics and legislation: The politics and legislation of countries can be key factors that affect the energy security of corporations. Changes in the political environment, such as the adoption of new laws or changes in regulations, can have an impact on the stability of energy supply. For example, political decisions that limit the export or import of certain energy resources can create uncertainty and risk for corporations (Smith, 2022).

Geopolitical conflicts: Geopolitical conflicts and tensions between countries can lead to interruptions in energy supplies and threaten the energy security of corporations. Territorial disputes or political antagonisms can result in blocking or reducing the flow of energy through

certain transit routes. Such conflicts can have long-term consequences for the energy stability and security of corporations (Johnson, 2019).

Energy diversification: Geopolitical factors may encourage corporations to develop energy diversification strategies to reduce the risk of political instability. Diversification of energy and supply sources helps corporations to free themselves from excessive dependence on certain regions or countries. In this way, the influence of geopolitical factors on the energy supply of corporations is reduced (Thompson, 2018).

Innovation and technological progress: Technological progress can have a significant impact on the energy security of corporations in the context of geopolitical factors. The development of new technologies for exploration, exploitation and renewable energy sources can reduce the dependence of corporations on politically unstable regions or resources (Davis, 2017).

International relations: Geopolitical factors are often reflected in international relations and cooperation between states. Agreements on energy cooperation, trade policies and diplomatic relations can affect the energy security of corporations. Openness to international cooperation and dialogue can help reduce the risk of geopolitical conflicts and maintain stability in energy supplies (Anderson, 2016).

Geopolitical factors have a significant impact on energy security at the corporate level. Politics and legislation, geopolitical conflicts, energy diversification, technological advances and international relations are all key factors that affect the ability of corporations to ensure a stable and reliable energy supply. Understanding and analyzing these factors are vital for corporations in order to identify risks and develop strategies for the protection and management of energy security.

Energy security has a key impact on corporate business, especially in the context of global energy challenges. First and foremost, energy security affects the business continuity of corporations. Energy supply is a key factor for carrying out basic operations, production, transport and distribution. Interruptions in energy supply, such as power outages or fuel shortages, can have serious business consequences. Energy security directly affects the financial sustainability of corporations. Energy price fluctuations, as well as political and geopolitical factors, can affect business costs. Increased energy prices or limited access to certain energy sources can increase operating costs and reduce profitability. Subsequently, energy security also has an environmental impact on corporate operations. With an increasing focus on sustainability and environmental protection, corporations are facing pressure to reduce greenhouse gas emissions and switch to renewable energy sources. Regulatory measures, as well as customer and investor demands for sustainable practices, influence the business strategies of corporations. This is precisely why business continuity, financial sustainability and environmental responsibility are key aspects that must be taken into account when managing energy security in the corporate sector.

Corporate business in the energy sector also faces certain risks, with the most significant ones being:

1) Financial risks and instability

Financial risks and instability represent a significant challenge for corporations in the context of energy security. These risks refer to possible losses or negative consequences that corporations may suffer due to fluctuations in energy prices, changes in the regulatory framework, geopolitical conflicts and other factors that affect energy supply. The management

of financial risks and instabilities is becoming a key aspect of corporate business in light of the increasing challenges and complexities in the energy market.

Financial risks refer to the possibility of loss or negative impact on the financial results of corporations due to unpredictable changes in the energy market. Fluctuations in energy prices, which are often caused by changes in supply and demand, may have a significant impact on the profitability and competitiveness of corporations. As corporations often rely on energy as a key resource for their operations, sudden increases in energy prices can lead to increased costs and reduced margins, while sudden price drops can affect the revenue side and investment plans of corporations. Changes in the regulatory framework can also create financial risks for corporations. Government policies and legislation can have a direct impact on energy business, such as taxes, subsidies or regulatory requirements. Modifications in these areas may require significant adjustments to corporate strategies and investment plans. For example, the introduction of new regulatory requirements for reducing greenhouse gas emissions may require investment in new technologies or switching to renewable energy sources, which can be a financial challenge for corporations.

2) Operational risks and jeopardization of the corporate business sector

Operational risks are an important aspect of energy security at the corporate level. Corporations face various challenges that can threaten the continuity of their business. The key operational risks and their impact on energy security are: technical failures, natural disasters, instability of the political environment and cyber attacks.

Operational risks are an important aspect that affects the energy security of corporations. Technical failures, natural disasters, instability of the political environment and cyber attacks can cause interruptions in energy supply and put business continuity in jeopardy. To confront these risks, corporations need to implement effective risk management strategies and establish contingency plans. Also, diversification of energy and supply sources, monitoring of political trends and implementation of strong protection measures against cyber threats are key steps towards ensuring operational stability and business continuity.

The most serious threat to corporate sector security are crisis situations caused either by the manifestation of human activities, natural or artificially caused disasters. The preparedness of corporations to manage emergency situations is one of the fundamental elements for safe operation of a company or firm. The phases of preparedness for responding to crisis situations can be divided into: the preparedness phase, the response phase, the recovery phase, and the mitigation phase.

The preparedness phase refers to the activities that corporations carry out prior to an adverse event, thus enabling an effective response when an adverse event occurs. The basic characteristics of this phase are that a company engaged in energy and energy product-related businesses establishes basic procedures and plans for possible crisis situations, develops appropriate capacities and forces for reaction, and achieves coordination with all relevant entities that could provide assistance in specific conditions (local governments, state level, police forces, army and others).

The response phase in emergency situations consists of measures taken before, during and immediately after the end of the negative event. Response is the most difficult part of emergency management. By achieving a satisfactory level of preparedness, corporations reduce their own vulnerability and increase resilience to accidents. The reaction phase begins as soon as it becomes clear that a negative event is imminent and lasts until the negative event ends. After determining the real danger to the energy infrastructure, the management of the company tries to protect workers and facilities as much as possible by notifying the authorities

at the local level. Exchange of information with local authorities and the measures and activities that are initially undertaken in energy facilities and plants can protect the local population and infrastructure, and provide: better organization of police and firefighting forces, deployment of human, material and technical resources, evacuation, rescue and emergency medical assistance. It is advisable that at this stage, if possible, the joint forces act as much as possible in accordance with the operational plans in order to approach the mitigation of the crisis and the transition to the recovery phase in a systematic way. The specificity of energy systems is that crisis situations can last extremely short, but the consequences can be catastrophic.

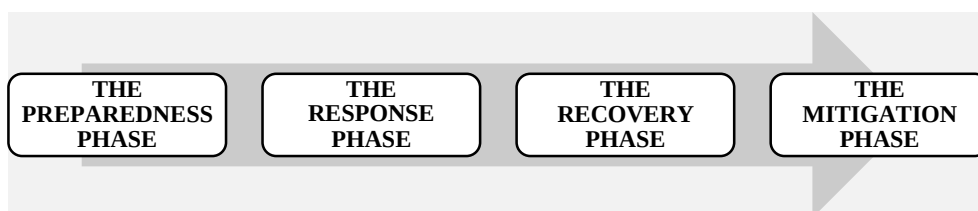


Figure 2. Phases of preparedness for responding to crisis situations

Source: Author's interpretation

The recovery phase is initially characterized by an unclear situation. Alongside the analysis and evaluation of damage caused by different types of emergency situations, priority repairs are also executed (parts of the energy production facility, possible installation malfunctions, information and communication system repairs etc.), demolition of damaged buildings, cleaning, waste removal and disposal, possible decontamination of the area, construction of new buildings, damaged infrastructure repairs, and such.

The mitigation phase, for companies in the field of energetics, involves efforts to remedy and mitigate the consequences caused by a crisis situation of any kind. When implementing mitigation measures and activities, it is crucial to also take into account natural, technical-technological, and social consequences of the emergency caused by the damage to the energy infrastructure. Certainly, the ultimate goal of mitigation should be resumption of continuous work.

When it comes to the attitude of corporations towards possible crises, five levels of their preparedness are mentioned: (Kesetovic & Kekovic, 2008).

- 1) Corporations prone to crisis (they do not have an early warning system, damage limitation plans rarely exist before a crisis occurs, and recovery systems are not yet in place);
- 2) Corporations that shy away from crisis (they often have programs for various types of disasters, but not for other types of crises, primarily external economic shocks or cyberattacks);
- 3) Corporations adapted to crisis (they have developed plans and procedures for a limited number of disruptions such as computer malfunctions, serious operator errors or major security breaches, but still do not understand the complex relations that contribute to the onset of crises);
- 4) Corporations strengthened by crisis (they do not represent progress in terms of types of crises they identify and in terms of implementing preventive actions, but have improved management of crisis phases - due to the establishment of proactive crisis management); and
- 5) Corporations prepared for crisis (have well-developed rules and procedures that explicitly take into account all critical systems that cause and prevent major crises, as well as a higher

level of awareness about the existing organizational culture and its positive or negative impact on crisis management).

Every corporation should develop its own strategy for maintaining energy security because it is a key aspect of business. Considering multiple challenges that can affect the stability of energy supply, corporations must develop effective strategies to maintain energy security and minimize risks that could jeopardize their business continuity.

One of the most important strategies for maintaining energy security is the diversification of energy sources. Corporations should consider the possibilities of using multiple energy sources to reduce the risk of supply instability. This may include the use of different types of fuel, such as fossil fuels, renewable energy sources or nuclear energy. Diversification of energy sources provides corporations with greater flexibility and resilience to changes in the market or geopolitical factors that may affect supply.

Besides the diversifying of energy sources, corporations can implement an energy efficiency strategy. This strategy involves identifying and implementing measures that reduce energy consumption in operations. This can include the use of energy-efficient technologies, process optimization, or infrastructure improvements.

Energy efficiency helps corporations reduce their dependence on external energy sources and reduce operating costs. Another important strategy is the establishment of long-term energy supply contracts. Corporations can form partnerships with energy suppliers to ensure continuous supply. Long-term contracts provide predictability and stability in energy supply, reducing the risk of interruptions or fluctuations in energy prices. This strategy requires careful planning and market analysis to ensure adequate supply at favorable conditions.

Additionally, corporations can focus on developing internal capacities for energy production. This may include the construction of own energy facilities, such as solar or wind parks, hydroelectric or thermal power plants. This strategy allows corporations to be self-sufficient in terms of energy and reduce their dependence on external sources. It also provides an opportunity for corporations to generate additional income by selling the excess of produced energy on the market (International Energy Agency, 2020).

In addition, corporations can implement an energy storage strategy. The development and implementation of storage technologies allow corporations to accumulate the excess energy during periods when it is available and use it when demand is higher or when supply is uncertain. This reduces the risk of supply interruptions and provides corporations with greater flexibility in energy use.

Maintaining energy security is a key challenge for corporations that depend on energy for their business operations. Implementing effective strategies can help corporations minimize risks and ensure stability in energy supply. Diversification of energy sources, energy efficiency, long-term supply contracts, development of internal capacity for energy production and energy storage are just some of the strategies that corporations can enforce. It is important that corporations carefully analyze their needs, monitor market trends and develop customized strategies that match their specific business conditions (United Nations Development Programme).

4. CONCLUSION

Consideration of energy security at the corporate level reveals the importance of this issue for maintaining the stability and successful operation of organizations. In the modern world, corporations are exposed to various risks related to energy supply and must develop strategies that will allow them to effectively manage these risks. Alternative energy sources, renewable

energy sources and improvement of energy infrastructure are key factors in ensuring energy security at the corporate level. Diversification of energy sources allows corporations to reduce the risk of energy supply instability, increase energy efficiency and reduce energy costs. Supplying traditional energy sources with alternative sources, such as solar and wind energy, and investing in infrastructure that supports renewable energy sources are important strategies for improving energy security. Furthermore, corporations should invest in technological solutions that will enable better monitoring and management of energy consumption, as well as the optimization of energy processes.

Integrating business ethics into all aspects of energy security management is critical to maintaining corporate integrity and accountability. Adherence to moral values, transparency in business, compliance with regulations and concern for environmental protection are important principles that corporations should follow. Business ethics play a key role in building trust with stakeholders and preserving corporate reputation. Leadership in the management of energy security plays a key role in successful implementation of strategies and achievement of desired results. Corporations should have leaders who are visionaries, capable of identifying future trends and challenges in the field of energetics and making decisions that will improve energy security. Leaders should be empowered with knowledge about energy technologies, regulations and trends in order to successfully lead organizations towards achieving a sustainable energy business.

The engagement and support of all corporate employees are key to the successful implementation of energy strategies. Every individual in the organization should be aware of the importance of energy security and contribute to the achievement of the set goals. This can be achieved through education, motivation and involvement of employees in the decision-making process and implementation of energy projects.

It is also important to emphasize the value of cooperation with external partners and experts in the field of energy security. Through partnerships with energy suppliers, technology companies, and research institutions, corporations can exchange knowledge, experiences, and best practices to improve energy efficiency and reduce risks.

REFERENCES

- Bajagic, M. (2012). *International Security*. The Academy of Criminalistic and Police Studies, Belgrade.
- DJajic, N. (2011). *Energy in Serbia - Yesterday, Today, Tomorrow*. The Academy of Engineering Sciences of Serbia, Belgrade.
- Johnson, E. (2019). *Energy Security in the Context of Geopolitical Conflicts*. ABC Press.
- Smith, J. (2022). *Geopolitical Factors and Energy Security*. London.
- Kestovic, Z., & Kekovic, Z. (2008). *Crisis Management Systems*. Faculty of Security and Protection, Banja Luka.
- Anderson, M. (2016). *International Relations and Energy Security: A Comprehensive Analysis*. JKL Publications.
- Mijalkovic, S. (2009). *National Security*. The Academy of Criminalistic and Police Studies, Belgrade.
- Nadic, D. (2010). *Essays on Political Ecology*. Faculty of Political Science, University of Belgrade.
- Ratkovic, B. (1981). *Military Lexicon*. Military Publishing House, Belgrade.

Thompson, R. (2018). *Diversification Strategies for Enhancing Energy Security*. Oxford.

Davis, S. (2017). *Technological Innovations and Their Impact on Energy Security*. GHI Books.

Simic, S., & Gostimirovic, L. (2017). *Energy Security - Challenges, Risks, and Threats of the Modern Era*. College of Business and Technical Education, Doboj.

Safety Culture. (2023, August 17). *Energy Security*. Retrieved from <https://safetyculture.com/topics/energy-security/>

International Energy Agency. (2023, August 22). *World Energy Outlook 2020*. Retrieved from <https://www.iea.org/reports/world-energy-outlook-2020>

United Nations Development Programme. (2023, August 22). *Sustainable Development Goals*. Retrieved from <https://www.undp.org/sustainable-development-goals/>