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## THE SPECIFIC RISKS OF THE ENERGY MARKET OF THE REPUBLIC OF MOLDOVA IN TIMES OF CRISIS

### RISCURILE SPECIFICE PIETEI ENERGETICE ALE REPUBLICII MOLDOVA ÎN PERIOADE DE CRIZĂ

Nicolae PLATON

ORCID: [0000-0001-7365-1144](https://orcid.org/0000-0001-7365-1144)

Doctor habilitat, associate professor at  
Academy of Economic Studies of Moldova,  
[platonanat@yahoo.com](mailto:platonanat@yahoo.com),  
[platon.nicolae@ase.md](mailto:platon.nicolae@ase.md)

PhD Student **Tatiana VIERU**, ASEM

ORCID: [0000-0002-2783-5214](https://orcid.org/0000-0002-2783-5214)

[tvieru@anre.md](mailto:tvieru@anre.md)

**Abstract.** *The aftermath of the pandemic crisis and the war in Ukraine has accelerated the rise in the prices of energy resources worldwide.*

*With winter approaching, the sudden energy crisis hitting the world is threatening already strained supply chains, causing geopolitical tensions and raising questions about how ready the world is for a transition to greener forms of energy.*

*The Republic of Moldova, being a net importer of energy resources, obviously would be affected by this phenomenon, and this is due to the fact that the energy security of the Republic of Moldova was ignored for several years by the central public authorities, and the country became totally dependent on the energy resources supplied by the Russian Federation. Thus, at the moment, there are practically no alternatives regarding the supply of energy resources, and the risks of stopping them are very high.*

*Under these circumstances, the state institutions responsible for this sector, in addition to the regulatory aspects, must have the capacity to manage the risks specific to this field.*

*In the long term, however, a broad vision is needed for the field of energy security and diversification of sources, so that such crises are avoided in the future.*

*Based on the above, this article was developed to highlight the problems facing the country's energy sector, in order to overcome the existing crisis.*

**Keywords:** energy sector, energy crisis, risks, strategies, technologies, innovation.

**JEL Classification:** M1, L9, O13.

#### **Actuality of the research topic**

The Republic of Moldova faces unprecedented energy challenges resulting from the dependence on imports from a single source. The malfunctioning of the energy market, caused by the limitation of natural gas imports, undermines the energy security of the country at the national level and risks generating energy collapse, stagnation and economic regression, not to mention the social aspect of this problem.

In this context, we consider it appropriate to develop a governmental energy anti-crisis program, according to several possible scenarios, capable of responding to various situations that may arise in the energy sector.

We believe that the modeling and analysis of crisis situations are activities that the government will have to manage in a special way.

The arguments presented above emphasize the actuality of the respective theme and demonstrate the necessity of carrying out a scientific investigation on this subject.

**The aim of the research.** The authors aim to highlight the possible risks that may appear in the energy sector of the country during the crisis period.

### **Research methodology**

In order to achieve the objectives proposed in the research, the authors have used the following methods and tools:

- the documentary method, based on accessing and studying specialized bibliographic sources;
- the analytical method, through which the essence of the researched processes was reached;
- the dialectical method, as a general scientific method of knowledge;
- the synthesis method, applied to establish the connections between the researched phenomena.

Taking into account the complexity of the research topic, an extensive arsenal of the scientific method of study, based on the principles of dialectical determinism, was applied to its realization. In this regard, resorting to scientific abstraction, it was taken into account that the driving force of development is constituted by the internal contradictions of phenomena and processes. It was considered that both induction and deduction are not independent forms of research, isolated from each other, but are interrelated and represent necessary aspects of the general way of studying economic reality.

**The results of the research** will result in the formulation of scientifically argued conclusions and proposals and recommendations, capable of reducing the effects of the energy crisis on the social sphere and the real sector of the economy. The carried-out research has an applied character, as it refers to an important field, namely the energy sector of the Republic of Moldova.

### **Introduction**

The energy sector presents some particularities that set it apart from other infrastructure industries. These particularities essentially influence the management of the sector and the structure of the related services market in case of crisis situations.

The war in neighboring Ukraine shows how fragile a country's dependence on the supply of energy resources from a single source is, especially if the focus on commercial operating conditions is dictated by geopolitical pressures.

The vulnerability of the supply of energy resources under these conditions must be treated with the greatest responsibility by the decision-makers in this sector. That is why a resilience and security analysis must be carried out periodically in the country's energy system.

Although the alternative ways of delivering natural gas from European countries have been under negotiation for a long time, the issue seems not to be resolved definitively, as there are still sensitivities related to the technical conditions and the natural gas transport infrastructure in different areas of the EU.

If there are objective impediments in the given segment, then the difficulties of foreign traders who have the necessary capacities for delivery, with respect to entering the wholesale market of the Republic of Moldova, are less objective. They mostly relate to going through some stages of registration and obtaining the permissive documents. These impediments, as well as the relatively limited demand for natural gas in the country due to the low level of consumption for industrial purposes, create a less attractive picture for large traders in the region.

As a consequence, the measures to improve the regulations of the energy sector regarding the removal of barriers for the diversification of supply sources, will allow the guarantee of equal access of both, traders from the Republic of Moldova and those from abroad to the wholesale and retail natural gas market.

We find that the international energy markets are in a continuous complex change in terms of technology, geopolitics, economics and climate. The Republic of Moldova is to align with international trends in order to create regulated, transparent, but also accessible and attractive conditions for both, local energy companies, as well as foreign traders, in order to open access to the wholesale market of natural gas and electricity as dynamically as possible, through specialized transactional platforms.

### **Approach of the topic**

The energy sector must operate on the basis of free market mechanisms, with the main role of the state being policymaking, regulation and guaranteeing the stability of the energy system. The domestic electricity and natural gas markets are composed of regulated and competitive markets, a fact that substantially complicates the activity of their participants, considering the public service obligations ancillary to the regulated markets. In this context, the forecasting function of energy market participants can influence the future events and their probabilities. Emphasis must be placed on *"intensification and substantial renewal of the content of the forecasting function, whereby management will base its entire activity of the organization on the basis of systematic long-, medium- and short-term forecasts and will evaluate its activities and results by comparing them with the predictions"* [Aldea A.S., 2010].

Thus, the issue of risk analysis in crisis conditions will allow a better understanding of its context, because risk reveals threats that a country must face if it wants to ensure its energy security.

Risk, as a concept, is associated with *"the possibility of variations in results from initially estimated values or levels"* [Patriche D., 2007]. Uncertainty is used to describe situations or events that cannot be associated with the probability of their potential occurrence.

By contrast, the risk affecting the energy sector as a whole cannot be eliminated by diversification. Systematic risk variables cannot be controlled by energy market participants, but through current and forward-looking operations, they can reduce "sensitivity" to undesirable events or changes in this field.

The tendency to assume or avoid risk is influenced by the individual characteristics of each energy market participant, contextual factors and organizational structure. The energy sector is a specific one, having a particularly large impact both on the national economy and on each individual as a consumer. Carrying out economic activities on the energy markets involves not only the risks inherent to a business, but also the assumption and execution of public service obligations, imposed by the state through special regulations, which aim to ensure the continuity of the supply of natural gas and electricity to different categories of consumers and the defense of their rights. Under these circumstances, the decisions of the participants in the energy markets carry an increased degree of risk due to the uncertainty of the occurrence of the effects after their implementation, and the final results may not be only the estimated ones.

The perception of a decision-making situation in conditions of an energy crisis, the assessment of risk and alternatives, the made choice, are influenced by the attitude towards the risk of the decision-maker. Natural risk propensity reflects the decision maker's general risk-taking tendency.

The methods and elements of risk assessment by the decision-maker are indicative and aim at their possible management. Any risk analysis must be done periodically, in order to have a real value for the sector. Among the most frequent risks, identified by the authors of this study, are the risks presented in *Table 1*.

***Table 1. The risks related to the energy sector***

<b>No.</b>	<b>Typology of risks</b>	<b>Characteristics of the risks</b>
1.	Political risks	These risks are associated with the geopolitical situation which is very unpredictable. An example can be the war in Ukraine which generated a worldwide energy crisis of proportions.
2.	Pandemic risks	That risk was caused by the Covid-19 pandemic, which led to a considerable reduction in energy resource needs.
3.	Operational risks	The risks due to the costs of maintaining the operational reserve resulting from the energy crisis are determined. These risks have so far not been explicitly identified in the energy market, but they are currently manifesting as a consequence of the war in Ukraine. In the future they will have to be taken into account when introducing a coherent risk management.
4.	Financial risks	There are risks regarding liquidity availability. Those risks are associated with the need to take loans, or receive subsidies from the state, for the purchase of natural gas on the wholesale market based on bilateral contracts.
5.	Technological risks	In the energy market, the risks associated with technological operation are significant and have an important impact in determining their management policy.
6.	Environmental risks	With the increase in the price of energy resources, consumers will have to use coal, which is quite polluting. In addition to this fact, the consumption of woody masses will increase, which will lead to the massive deforestation of the forest fund.

7.	Risks of responsibility of decisions	The various risks exposed above require the implementation of responsible and assumed decisions by the decision makers. We must emphasize the fact that the decisions made by the decision-makers can be adapted under conditions of political, social and, last but not least, psychological pressure.
8.	The risk of availability of natural resources	Insufficiency of natural gas on the European market and high prices in connection with the partial shutdown of the flow of natural gas from the Russian Federation as a consequence of the war.

*Source: Adapted by the authors according to [Lega A., 2008]*

We are aware that energy markets are the result of the interaction of producers, suppliers, transportation system operators and market distributors in search of maximum profits, as the theoretical concepts reveal. At the current stage, however, energy markets are clearly regulated and have very precise rules of the game. Each participant of the natural gas or electricity market has its well-established role, according to the rules of the respective markets.

Besides, the stereotype of separating the state from the energy market is an artificial one, an illusion far from reality. Governments are obliged to intervene, in crisis situations in various fields of economic activity, creating and eliminating markets, but also limiting or favoring the rules of the game in various sectors of activity, including in the energy sector. Therefore, the energy sector market is often the result of political choices and decisions, being geopolitically and dimensionally delimited by the dynamics of demand and supply, regarding the need for these resources.

Currently, science and technology seem to be the factor with the greatest impact on the energy resource market and society as a whole. It is increasingly obvious that the pace of economic development depends on the energy resources that are made available to mankind. As any evolution in the sphere of science and technology involves some long-term consequences, which cannot be neglected nor always foreseen, attention is required to accelerate the pace of development of alternative energy resources and enhance regulations in this field.

The anticipation of technical developments, at the level of the energy sector, but also at the scale of the entire society, represents the key particularity in reducing the degree of risk exposure of this sector. Decision makers need to focus their attention on the following aspects:

- the pace of developments recorded in this sector;
- the current situation created in the energy field;
- possible limits or barriers, their nature and the means by which they can be eliminated or diminished;
- identifying the methods of ensuring the security of the supply of energy resources.

Such an approach allows a realistic anticipation of developments in the sphere of the energy sector, providing decision makers with clues about possible strategies to be implemented in this sector, which is a vital one for the national economy.

Most research on strategy evolution has shown that strategies generally develop in an incremental manner, progressively modifying the already implemented strategies [Vagu P., 2008].

Referring to the energy strategy of the Republic of Moldova, until 2030, that document provides concrete benchmarks for the development of the energy sector in the Republic of Moldova, with the aim of ensuring the necessary basis for economic growth and social well-being

[Platon N., 2022]. Through this sectoral policy document, the Government of the Republic of Moldova presents its vision and identifies the country's strategic opportunities in the energy context [<https://www.legis.md>].

Although the policy document provides for concrete actions that the country must take in the next period, we are of the opinion that the country's energy security must be ensured by solving the following tasks:

- diversification of import sources;
- adaptation of an energy efficiency program of the country;
- the gradual transition to green energy with a non-invasive impact on the environment;
- ensuring energy storage capacities and backup systems;
- optimization of consumption by final consumers.

Solving these tasks requires a fundamental change in the way our society behaves, so that we use fewer energy resources, while maintaining the quality of life. In this regard, an important role belongs to the importers of energy resources, who must use the best available technologies and develop the most energy efficient technologies and products in order to reduce the existing risks in the current crisis conditions. Technological research, innovation and stimulation of the assimilation of innovative technologies can be the important factors in achieving the proposed tasks.

At the same time, we must be aware of the fact that the implementation of advanced technologies, which largely include electronic command and control systems, computer systems for surveillance, optimization, data acquisition, etc., requires the attraction of private investments and the continuous training of specialists in the field.

To sum up what has been presented, we consider it appropriate for the Republic of Moldova to develop its energy security strategy on *nine priority directions*:

1. diversification of import sources of electricity and natural gas;
2. establishing a list of priorities regarding the construction of new infrastructure elements necessary to ensure safety in the supply of electricity and natural gas;
3. creation of sufficient stocks of natural gas in order to ensure the supply of these resources;
4. initiation of a feasibility study regarding the construction of natural gas storage facilities on the territory of the Republic of Moldova;
5. development of a strategic technological plan at the national level to ensure the optimal utilization of national research resources and innovation potential;
6. development of a policy document that ensures the achievement of basic objectives, such as: long-term energy security, a functional energy market, sustainable economic development;
7. achieving energy savings in the residual sector by increasing energy efficiency through National programs that will encourage investments in thermal insulation;
8. increasing the share of renewable energy sources in total energy consumption;
9. reduction of greenhouse gas emissions according to some scenarios of measures and strategic documents issued by the competent institutions.

## **Conclusion**

The future of the energy sector is marked by a series of problems, the most important of which are:

- the increase in the consumption of energy resources and the increasing dependence of mankind on the various forms of commercially available energy;
- the galloping increase in tariffs for energy resources;
- tension in the Russia-EU energy dialogue in the context of the war in Ukraine;
- the impact of this sector on the environment, including through a substantial contribution to global warming and climate change;
- the exhaustion of fossil fuel sources over time, with the first effect in increasing their prices on world markets;
- the technological and economic difficulties in using renewable energy sources, as well as the limited usable potential of these resources.

## **Proposals and recommendations**

It is obvious that the primary and secondary legislative framework in the energy field of the Republic of Moldova must strictly transpose European directives, but at the same time, must be adapted to regional realities. The improvement of the legislative framework is still extremely necessary to ensure the energy security of the country, competitiveness, environmental protection and safety in operation, to attract and support investments and last but not least, to be able to respond to emergency situations in the energy sector and to the needs of the most vulnerable energy users.

In order to increase energy security and reduce the pressure on vulnerable groups of consumers in the energy crisis situation, it is necessary to consolidate the capacities of energy market participants and the Government's support mechanisms, so that conditions are created for transparent and non-discriminatory procurement, financial mechanisms, the mechanism for creating and maintaining mandatory stocks of natural gas at the lowest possible costs.

At the same time, it is necessary to make investments both, in the infrastructure of natural gas, as well as in electricity, for the interconnection in optimal conditions with the neighboring states, the basic goal being the diversification of the import sources of energy resources.

Therefore, in order for the energy market of the Republic of Moldova to function normally, without being subject to major risks for the future, it is necessary to carry out the following actions:

1. Establishing effective ways of cooperation with the regulatory authorities in Romania, as a member state of the European Union, and Ukraine, as a strategic partner.
2. Ensuring a flexible electrical energy system, able to adapt at reasonable costs to any change, in order to reduce the effect of uncertainty on the basic premises.
3. Effective use of primary resources in the country.
4. Ensuring the level of transparency and competition by the regulatory body.
5. Ensuring the operation of the wholesale market of natural gas and electricity according to European regulations on the internal energy market, being based on legal requirements for the development of energy from renewable sources, integration of balancing markets, interconnection of regional energy systems.

6. Modernization of the energy governance system.
7. Increasing the quality of education in the energy field and continuous training of human resources.

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