NATIONAL ECONOMIC SECURITY

EFFECTIVENESS OF THE ECONOMIC GROWTH POLICIES: ENERGY SECURITY OF THE REPUBLIC OF MOLDOVA

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Abstract
Energy security, critical infrastructure and the sustainability of supplies of energy resources are the key elements in the process of modernizing the country and attracting foreign investments. The country's dependence on external energy sources is a major constraint in ensuring a stable development and economic growth. Energy security - has o high price. However, the investments in energy security are extremely necessary and justified over time. These investments make a direct contribution to the economic growth and to the well-being of the nations. Therefore, the change of the development paradigm and economic growth from consumption to investment and innovation is imminent.

Keywords: *investments, economic growth, energy security, energy package, Acquis communautaire*

JEL Classifications: *E22, E23, E66, F01, F43, H12, H81*

INTRODUCTION

Our planet is facing considerable changes. The global economy is having a considerable impact on the environment and the ecosystems that support life. While the signs of climate change are unprecedented and represent a real threat to our civilization the world remains reticent and makes limited efforts to tackle this issue.

An infinite economic growth on a finite planet is impossible. The trajectory of economic growth is unsustainable while maintaining the status quo and "business-as-usual" approaches is utopic. Therefore, developing a new economic and trade vision and policy is a pragmatic necessity.

The global energy market is constantly changing and in evolution. Over time, the energy sector concerns and priorities change, as do the energy policies promoted by the governments. The big challenge for Western countries is to ensure the long-term supply of energy to people in times of growing demand - without harming the environment.

The country's economy is heavily dependent on the state of its energy sector performance, infrastructure, diversity and security. A developed energy market is the foundation for a solid and sustainable economic development, and especially the industrial development of the country.

Currently, the Republic of Moldova is largely dependent on supplies from the Russian Federation. While the electricity is provided by several dubious suppliers. One from the eastern districts of the country and another one - an electricity trader from Ukraine involved in several regional schemes.

The Republic of Moldova has also inherited an inefficient and outdated district heating system, burdened with debt to gas suppliers. No capital investments were made in the district heating

system since the country gained its independence in 1991. Several investment projects were launched to modernize the district heating systems in the capital of Chișinău and the second largest city of Bălți, after the country signed the Association Agreement with the European Union (AA/DCFTA). Another EU project includes the support to the diversification of natural gas supply (ENSO-G) and electricity interconnection with the EU market (ENSO-E) through the Romanian national electricity systems.

The Republic of Moldova commitments under the AA/DCFTA and Energy Community Treaty obligations represent a unique opportunity to overcome the current issues in the energy sector. Delivering on these commitments can also expose the country to risks related to the gas and electricity supply disruptions.

Transposing EU directives into national legislation and working together with European partners to achieve the EU targets in the energy sector will allow this country to preserve its internal resources and help develop profitable businesses.

1. GENERAL ASPECTS AND IDENTIFIED PROBLEMS

The energy sector plays an essential role in the process of sustainable economic development on the global and national level.

The modernisation of district heating by increasing the cogeneration capacities and operational efficiency, as well as, cost reductions would prompt higher competition in the energy sector and bring new economic benefits.

The importance of the energy sector continues to grow and is directly proportional to the level of industrialisation and development of each country. An obvious indication is the increase of energy consumption per capita, the population living standard and the average wage.

According to power data flow, during 2020 the transmission system operator (TSO), the distribution system operators (DSO) and suppliers have procured 4 269.8 million kWh, 0.7 percent lower compared to 2019 (4 301.9 million kWh). A total of 3 866.1 million kWh was delivered to consumers, 0.2 percent less compared to 2019 (3 875.1 million kWh).

Table 1. Electricity procurements and deliveries*

Index	Unit of measurement	2001	2005	2010	2018	2019	2020
1. The amount of electricity procured - total	mln. kWh	3 194,8	3 359,5	3 835,7	4 178,8	4 301,9	4 269,8
	mln. MDL	1 161,6	1 180,1	2 905,5	4 152,1	4 542,9	4 154,6
2. The average price of electricity procured	bani/kWh	36,36	35,13	75,75	99,36	105,6	97,3
3. The amount of electricity delivered to consumers – total	mln. kWh	2 166,0	2 585,0	3 229,2	3 737,6	3 875,1	3 866,1
	mln. MDL	1 376,4	1 943,1	4 320,4	6 926,8	6 806,5	6 798,6
4. Average tariff for electricity delivery (excluding VAT)	bani/kWh	63,55	75,17	133,8	185,33	175,65	175,85

* the data for 2019 and 2020 include the consumers who have made use of eligible consumer status

Source: Report on the activity of ANRE for 2020

In 2020, the increase in electricity production by the thermal power plants had an impact on power/electricity generation (Table 2). The amount of electricity produced by S.A. "Termoelectrica" reached 621 mln. kWh, 19.7 mln. kWh (3.3%) higher compared to the electricity production in 2019 (601.2 mln. kWh). S.A. "CET-Nord" generated 100.5 mln. kWh, 1.7 times more compared to the electricity production in 2019 (58.3 mln. kWh).

The amount of electricity produced and delivered to the electricity power grid by the producers of sugar from their own generation sources, has seen a 25.9% decrease to 1.9 million kWh.

The state owned producer of electricity from renewable sources "NHE Costesti" has produced 27% less electricity compared to 2019. While the total amount of electricity produced from renewable sources - by producers who have their tariffs approved by ANRE, or sell electricity at negotiated prices, has increased by 6.4 million kWh (8.6%).

Table 2. The production and procurement of electricity during the period 2001-2020

Index	2001	2005	2010	2018	2019	2020
Electricity production (delivered from the power lines) - total, million kWh	**1 042,9**	**999,8**	**888,1**	**804,2**	**801,1**	**851,4**
incl.: CET-1	115,4	128,9	82	×	×	×
CET-2 (from 2015 – Termoelectrica)	812,6	724,7	665,4	651	601,3	621
CET-Nord	31,5	55,5	57,1	53,9	58,3	100,5
NHE Costesti	72,2	83,8	78,3	43,7	64	46,7
other renewable energy sources producers				53,5	74,9	81,3
other internal producers	11,2	6,9	5,3	2	2,5	1,9
Electricity procurement - total, million kWh	**3 194,8**	**3 465,1**	**3 915,6**	**4 303,9**	**4 301,9**	**4 269,8**
incl.: RED Nord	569,7	588,1	651	85	76,4	74,3
RED Nord-Vest	314,9	287,1	342,4	×	×	×
Premier Energy Distribution (RED Union Fenosa)	2 310,2	2 484,3	2 842,2	243,2	243,9	226
Premier Energy (GNF Furnizare Energie)	×	×	×	2 767,6	2 621,5	2 543,9
FEE Nord	×	×	×	970	972,7	949
Moldelectrica	×	×	×	112,9	106,5	103,4
Consumers who have used their eligibility	×	105,6	80	125,1	280,9	373,3

Source: The ANRE Activity Report for 2020

The assessment of the energy sector based on existing assets and their efficiency provides the following issues:

1) the energy system of the Republic of Moldova has the following characteristics:
   a) insufficient capacities for local production and heavy dependence on energy imports;
   b) low energy consumption (both per capita and per consumer).
   c) Too high energy consumption of the national economy;
   d) the dependence on gas imports only from one source (Russian Federation);
   e) increasing dependence on electricity imports from "Молдавская ГРЭС" (*Moldovan* Hydroelectric *Power Station - MGRES*) in Transnistria on the left bank of the Dniester/Nistru River;

   These are the main risk factors for the security of gas and electricity supply.

2) The lack of regional interconnections and cross-border trade arrangements for energy products. No electricity infrastructure that would connect the national electricity market to the European one. The economy of the Republic of Moldova is exposed to external risks, including the unjustified prices volatility and the reliability of supplies;

3) Despite an early start of unbundling (TSO separation) activities in the electricity sector, the Government is yet slow to implement the necessary actions for the liberalization of the energy market. The gas sector is facing greater challenges. The process of improving operational efficiency and attracting investment is still pending. The gas market is only 10% open, which does not allow setting

up a stable and predictable market with transparent prices. All these factors have made it impossible to take advantage of all the benefits provided by the Third Energy Package;

4) The government's efforts to transpose the EU Acquis communautaire into national legislation and to reform energy markets have had a limited effect and are below expectations. The main problem is the enforcement and compliance of sectorial legislation, as well as, the development of appropriate sectorial legislation. The national gas market is basically blocked by the lack of progress in the process of unbundling the TSO Moldovatrangaz from Moldovagaz. Unfortunately, these shortcomings cannot bring real changes to the national electricity and gas markets;

5) The problem of attracting financial resources into the energy sector. There are more investments/funds available from donors rather than private businesses. Unfortunately, even the donors support and funds have not been fully absorbed;

6) The internal production of electricity from renewable sources potential as well as heat production through high efficiency cogeneration is not being fully capitalized. The energy sector requires large and long-term investments for the renovation, the modernization and the upgrade of the energy infrastructure, as well as for the development of new production capacity;

7) The low level of energy efficiency. The actions undertaken by government and local authorities are fragmented and do not have a systemic approach. The task of improving energy consumption has not yet become a priority for the public sector as well as domestic consumers, who are waiting for some tax benefits and support from the state;

8) The lack of regional arrangements to store the natural gas is yet another risk for the security of gas supply during the cold season or a supply disruption. During the summer of 2020, Moldovagaz has initiated the procedure of storing 100 mln m3 on the territory of Ukraine. These volumes have been purchased on the open market at a lower price and were used for balancing consumption of gas in the spring of 2021, when prices increased significantly. Thus, the gas company has the experience of storing gas volumes abroad. This experience should be followed and expanded;

9) Moldova has no emergency oil stocks. The absolute minimum oil products stocks necessary to ensure the supply of the national economy in case of emergency was not yet implemented by the authorities. The EU recommendations on storing oil stocks should be implemented as a matter of urgency;

10) No geodetic and technological research was done in order to identify and extract oil and gas in the southern part of the country. The availability of these resources would allow the diversification of the energy sources and the strengthen the energy security;

11) The continuing physical deterioration of the electricity and heating infrastructure;

12) Limited investments provided usually for periodic maintenance only, in the heating systems generate losses and discomfort for consumers, who continue to move towards individual heating systems (boilers);

13) The reduction of traditional gas transit routes (on the territory of Ukraine) has reduced to zero the volumes of gas transiting the territory of the Republic of Moldova. As a result, the unit capital costs, as well as, the maintenance and operation costs have increased, which prompted an increase in gas tariffs;

14) A limited use of available energy produced from renewable sources (electricity, biofuels, biogas), as well as, limited production of electricity and heating through high-efficiency cogeneration;

15) All energy sectors require large and long-term investments for the renovation, modernization and upgrade of the energy infrastructure, as well as, the development of new energy production capacity, including the production of energy from the renewable sources;

16) The lack of well-defined policies on the development and location of fuel stations.

In one way or another, these issues have contributed to the state of emergency on the national gas market. Most likely, this crisis will have irreversible effects on the national economy.

The recent analysis of the energy market has concluded that there is no real competition on the energy market, which obviously is a major problem. Most companies are operating on the regulated market as the free market is still vulnerable and is exposed to a number of collateral risks.

The separation of activities and reflecting the costs in the energy tariffs cannot provide sufficient support for affordable energy prices for consumers. If the prices of goods are constantly rising due to a lack of competition, a regulatory system based on tariffs can only try to decrease the consumer bills by lowering the tariffs for the TSO and DSO. This will not support or attract the much needed investments and infrastructure projects. It can only keep the existing assets in relatively good and functional condition and will not improve the investment capacity of the operators.

During 2010-2020 the gross internal electricity consumption in the Republic of Moldova has increased by about 34% (Table 2). The production of energy during this time has increased significantly, while the energy imports remained largely unchanged.

The share of the natural gas on the primary energy market fell to 29% in 2020 compared to 36.5% in 2010. The share of gas was overtaken by oil products that reached 33%.

If we compare the gross internal consumption of energy of the Republic of Moldova to the EU countries, we could see that the share of electricity as a primary energy source is relatively high in the Republic of Moldova. This is largely due to the fact that Republic of Moldova is mainly supplied by the *Moldovan* Hydroelectric *Power Station (MGRES) in Transnistria*.

The country's dependence on imported energy resources is currently estimated at 65% compared to 90% in 2005. The decrease in energy imports is due to an increase in local production.

The largest share of final energy consumption in the Republic of Moldova is held by the residential sector (about 49% in 2020), while in the EU this share is 25.7%. The share of final energy consumption in the transport, trade and public services sectors in Republic of Moldova is about 5% while in EU countries it is 3%. The energy consumption in the industrial sector in the Republic of Moldova has a share of only 7.9% compared to 25% - in EU countries.

Due to an old and technically outdated equipment and machinery the Republic of Moldova is has registered very poor performance indicators. Despite its weak economy, the Republic of Moldova consumes more than 224 kg of oil equivalent per USD 1000 of its GDP, compared to 107 kg on average in EU countries that have a 10-15 times higher GDP per capita.

This just shows that a production unit manufactured in the Republic of Moldova consumes twice as much energy as in developed countries due to the outdated and inefficient equipment, and the fact that the production premises are not efficient.

All these indicators demonstrate the lack of efficient and competitive industries that would allow Moldovan products to compete on the external markets.

Despite the importance of the energy sector for the national economy, little has been done by public authorities to develop this sector. The efforts of improving things were mainly focused on harmonizing the primary and secondary legislation to EU acquis communautaire.

The Republic of Moldova has signed financial agreements to modernize the district heating in Chisinau (about EUR 110 million) and Bălți (about EUR 10 million). A total of USD 270 million (EBRD, EIB, World Bank - loans and EU - grant of EUR 40 million) were contracted to for the development of the energy interconnection with the European market Isaccea-Vulcanesti-Chisinau and the back-to-back station in Vulcanesti. Moreover, the authorities analyse the possibility of building 2 electricity interconnection lines with the Romania: Suceava-Bălți and Iași-Ungheni-Strășeni (Chisinău).

The gas pipeline Iasi-Ungheni-Chisinau, built by the Romanian Transgaz, is expected to capitalize the investment of EUR 93 million.

Other projects meant to diversify the supply of gas and electricity or upgrade the national energy system have not been yet developed.

A truly competitive market is a market that gives access to new market players. The foreign investors, in particular, are expecting to have access to tradable energy products and cross-border capacities, similar to those in the EU market.

According to the **Energy Community Treaty** requirements**,** the Republic of Moldova has to undertake very difficult steps in a very short period of time. The priorities of the government and other public authorities must be directed to the unconditional implementation of the Third Energy Package, which includes the full liberalization of the electricity and gas markets, the reorganization of the operators (in particular Moldelectrica and Moldovagaz) and their affiliated companies.

The energy sector in the Republic of Moldova is also struggling with an unstable institutional framework. The lack of competition on the internal market and non-transparent electricity procurement procedures prompted more systemic issues and higher debt burden for some heating companies. Furthermore, the debt towards the gas supplier Gazprom currently exceeds USD 7.5 billion. These issues are hampered further by the limited capacity of state institutions to generate solutions and a strategic vision to overcome the current and historical issues.

2. WHAT DOES THE EU ENERGY MARKET INTEGRATION MEAN?

By signing the Association Agreement with the EU (AA/DCFTA) and the Energy Community Treaty, the Republic of Moldova has undertaken some commitments on the establishment of a common energy market with the EU, launching at the same time the process of restructuring and modernizing the energy sector.

According to the provisions of the AA/EC, the Republic of Moldova must implement a regulatory and institutional framework, adjusted to the acquis communautaire, that includes the following:

- **The liberalization of electricity and gas markets.** The implementation of the Third Energy Package which is the main normative act in the energy sector for the absolute majority of EU countries. According to EU directives, the generation, transmission and distribution companies of electricity and gas must be separated/unbundled. The goal is to create and develop a competitive, clear, non-discriminatory and transparent market, while ensuring the security of energy supply. The implementation of the Third Energy Package will allow all households and industrial consumers to be able to choose any supplier at any time and at the lowest cost possible. The deadline for the implementation of these international commitments was - January 1, 2020. At the moment, the Republic of Moldova has achieved this goal only for the electricity market. The process of separation of gas market operators is compromised by the regional supply uncertainty from Gazprom, the historical and current debts for gas and the regulation of the activity of the Transnistrian TSO and DSO. It is important to emphasize that Gazprom holds a majority of the shares of Moldovatransgaz, Moldovagaz and its 13 subsidiaries. The Energy Community and Moldovan authorities are trying are working together to draft and adopt a roadmap of separating the TSO according European principles.
- **Oil reserves**. According to the European regulatory framework every state should create their oil reserves for at least 90 days of net imports or 61 days of average consumption. These provisions intend to strengthen the energy security of the state in case supply disruptions. According to the national legislation the state must hold the equivalent of 30 days of net imports. The actual data is considered a state secret and is not available to the public. The implementation of these provisions by the Republic of Moldova, which is totally dependent on oil imports, are extremely important and shall have a positive impact on national energy security;
- **Energy efficiency**. Since 2010 the Republic of Moldova has made significant progress in establishing a regulatory and the financing framework for energy efficiency. The process of transposing the European regulations has been amplified in 2014, upon signing the AA. The laws

on energy performance of buildings and energy efficient products – labelling were approved, transposing thus the provisions of EU directives.

- **Renewable resources**. According to the Energy Strategy of the Republic of Moldova until 2030, 20% of energy consumption should be covered by the energy produced from renewable sources. The sectorial target was for electricity supplied from renewable sources was set at 10%, which is slightly higher than 400 MW. In 2020 the Government of the Republic of Moldova has authorized the operation power plants that produce electricity from renewable sources with a total capacity of 168 MW, 113 MW of which shall be allocated according to the tender procedure while 55 MW will be allocated to producers that confirmed their status of eligible producer (organized by ANRE). For 2022-2025, the Government is examining the possibility of authorizing the operation of renewable power plants for a capacity of about 370 MW.
- **Institutional framework**. The liberalization of the energy market and its operation - in a competitive manner requires an independent and transparent institutional monitoring framework. According to Moldovan legislation the energy regulator (ANRE) is independent and subordinates to the Parliament only. The transposition of the legal trading mechanisms (public tenders, tariff setting, etc.) similar to EU standards will allow the government to attract investments and ensure an efficient market operation. Following the transposition EU regulatory framework on procurement, the energy companies found themselves in the position to approach a commercial practice open to competition and transparent energy procurement. In order to avoid an inappropriate approach and inefficient contracts, it is necessary to apply a judicious enforcement control. The liberalization of the energy market and the amendments done to the institutional/normative framework set clear market rules and a predictable business environment which is obviously attractive to foreign investors.
- **Diversification of energy sources**. The integration into the EU energy market, will allow the Republic of Moldova to exploit its capacities as a transit and exporting country. Extending the number of electricity networks with Romania will allow a higher transit capacity from Ukraine as well as exports of electricity from the *Moldovan* Hydroelectric *Power Station (MGRES)*. The access to the European electricity and gas networks will decrease the country's dependence on energy imports from a single source.

Despite its Association Agreement with the EU, the Republic of Moldova has seen little progress in implementing its international commitments. The country has missed several deadlines for the implementation of key documents.

3. ENERGY – AS A KEY ELEMENT OF ECONOMIC GROWTH

The global warming concerns, the rapidly depleting oil, gas or coal resources and potential economic backlash - compete with the moral concerns related to the economic growth and the real contributions brought to societies.

The economic development is based on 3 basic factors: capital accumulation, labour force and its productivity (which includes the technology development, efficient governance, skills, etc).

The analysis of economic development in the Republic of Moldova reveals a very alarming conclusion - as there is no real effort to change the country's development paradigm, the economic growth potential for the coming years is limited to no more than 4.5-5% annually. Even this rather moderate growth scenario is based on rigid assumptions that the exodus in the labour force will stop and the remittances will remain at the current level or even higher.

Certainly, this growth is insufficient to ensure a convergence trend with comparable countries, and even less if we compare Moldova with European countries.

The economic growth of the Republic of Moldova during 2000 - 2010 was largely due to the increase in capital - the productive stock of fixed capital. This has increased by an average of 8.2% annually, which is a fairly high rate, but still insufficient. Moreover, the growth of the Gross domestic

product (GDP) has also been prompted by a higher labour productivity and capital gains (4.7% annually). Therefore, this growth is largely extensive rather than intensive. The transition of the economic activity from agricultural sector (which has a low productivity) to industry and services sector which has a higher productivity - explains this economic performance.

The labour force movement had a negative impact on the economic development. An extensive immigration during this period prompted a lower activity rate of the national economy (from 60% to 44%). During this time the effective labour force, has decreased by an average of 2.8% per year. This decrease in labour force undermines the positive impact of the capital and productivity growth and, as a result, reduces the GDP growth.

In order to increase the productive stock of capital, the economic development paradigm should focus on attracting local and foreign investments, developing export industries, promoting the knowledge-based society (organizing more research and development activities), innovation and technology transfer oriented towards efficiency and competitiveness.

The change of the economic development paradigm of the Republic of Moldova shall be achieved by a fair distribution of economic developments benefits to all social groups. The speed, the scale and the consistent approach to the wide spectrum of proposed reforms are also important.

The change of the economic development paradigm cannot be achieved by a set of instant reforms only, but through massive investments in key economic sectors, including the energy sector which can generate sustainable and significant economic growth.

Following the adoption of the Energy Strategy of the Republic of Moldova until 2030, a set of rules and targets have been introduced to increase energy efficiency, to support greener energy sources and connect the national energy markets. The government has directed its efforts to improve the energy efficiency by reducing energy consumption, increasing the share of renewable energy up to 10% in the total energy mix, as well as, diversifying interconnections with European gas and electricity markets.

During 2010-2020 the Republic of Moldova has registered and average economic growth rate of 5-8% per year. The economic growth was largely based on consumption. The current economic scenario continues on the same path which is - natural economic growth, similar economic, social and political trend, growing remittances and structural reforms. This baseline scenario estimates an average annual GDP growth of 5-6% per year.

In terms of economic growth prospects, the dominant position is held by the industrial sector that is recovering due to a rebound of the world economies. The second largest contribution to economic growth is coming from trade, transport and logistics services.

The economic growth based on consumption (including the household and public administration consumption) generates imbalances and hinders the medium and long-term development, and therefore does not represent the best path for the economic development.

The Republic of Moldova needs investments to catch up with the rest of the countries in the region as well as EU countries. Considering that the domestic capital is not enough - either because it has limited resources or it is burdened with debt. We would like to see foreign investments that are in line with market's potential, as well as, large public investment that are available as non-reimbursable funds or loans with low interest rates.

Despite the ongoing fight with COVID-19 pandemic, the Republic of Moldova is seeing an increase of about 11.7%. in GDP of first half of semester of 2021. While the second quarter of 2021 saw a spike of over 21.5% in GDP - compared to the same period in 2019. It is an incredible and unpredictable performance of the national economy.

However, in order to improve the living standards and ensure sustainable development, the Republic of Moldova needs another model of accelerated economic growth - based on investment. The average level of economic growth must be over 15% per year. Such levels of economic growth

can be achieved only through the process of industrialization and the development of economic sectors with increased added value.

The energy efficiency has a direct impact on economic development and poverty reduction. The implementation of the new model of qualitative and accelerated economic development, based on investment and innovation, should be supported by the development of critical infrastructures, and in particular the energy infrastructure. The reliability, competition and diversity of energy infrastructure are the main pre-conditions to attract long-term investment.

The government's priority should be the development of a competitive and efficient energy sector that is able to provide the necessary energy resources and is prepared to act promptly in case of a sharp price fluctuations on regional and international markets. The national strategic vision must be based on fair competition and the liberalization of the energy markets that are integrated into the European markets.

An active and consistent energy policy and a legislation framework based on best international practices, fully aligned to the European standards - will help change the economic development paradigm. The development of the energy sector should be based on: (i) ensuring the state's energy security by diversifying interconnections and (ii) increasing energy efficiency.

Energy security can be achieved by liberalizing the energy market according to the provisions of the Treaty establishing the Energy Community, connecting the Moldovan energy market to EU energy markets and developing the necessary networks to transport energy resources.

Therefore, based on current needs and expectations of the consumers over the next few years, the Republic of Moldova would need about EUR 1 billion of investments in the energy sector. These investments should be used to build the 400 kV Vulcanesti-Chisinau electricity line with 2 management substations and the back-to-back station, as well as, two 300 kV interconnections: Suceava-Balti and Iasi-Straseni. In addition, it is important to add a new gas pipeline to the Iasi-Ungheni-Chisinau pipeline in order to connect the second largest city of Balti. This would need an additional investment of about EUR 100 million. Another EUR 500 million are necessary for the modernization and enhancement of the country's gas transmission networks, as well as, maintenance cost optimization.

Along with the development and modernization of the traditional power generation capacities, the state should support the use of renewable resources. There is a potential of about 400 mW for electricity generation from renewable sources or about 10% of total consumption.

Therefore, the development of domestic electricity generation capacities, the reduction of energy imports and strengthening the country's energy security, would create favorable fundamentals to attract foreign direct investments.

The total volume of the investments in renewables is reaching EUR 100 million per year with the total market capacity of about EUR 1 billion in the next 10 years.

The investments in energy infrastructure and electricity generation will add 2.5-3% to economic growth

It is extremely important to optimize the energy mix, to diversify the energy resources, as well as create new energy generation capacities.

Energy efficiency can be achieved by – optimizing the intensity of energy provided to residential, industrial, transport and agricultural sectors, enhancing the Centralized thermal energy supply systems (SACET), implementing efficient energy programmes and technologies and encouraging the use of renewable sources, etc.

An improved energy efficiency will have a direct impact on economic sectors that use large volumes of energy in the production process. A gradual increase in energy efficiency by up to 10% would increase in the volume finished goods produced by a similar percentage, which makes them more competitive. The total annual savings can reach to about MDL1.5 billion, in current prices.

Energy efficiency must be stimulated through state programmes and financial instruments that are offered also by development partners for the rehabilitation of residential areas. The rehabilitation projects are estimated at about EUR 100 million per year.

According to some estimations the investments in energy efficiency projects could increase the annual growth rate of GDP in the medium and long term by at least 0.5% (from energy saving alone).

Unfortunately, the national economy continues to see low volumes of foreign direct investment. Most of these investments were directed to free economic zones or processing industries with an intensive use of labour force. We can't go wrong in suggesting that a better coherence in public policies, fiscal stability and improved infrastructure would have attracted more investors.

In 2020, the volume of public investments has reached a 10 years low. The permanent incapacity to access European funds is an important impediment of the Republic of Moldova that hinders also the performance of energy companies.

CONCLUSIONS

The economic growth in the Republic of Moldova is closely correlated with remittances and the consumption generated by these. The constraints related to the limited domestic production capacity means that demand is mainly covered by imported goods and services. While the public budget benefits considerably from remittances sent by Moldovans that work abroad the trade balance shows an alarming trade deficit. An economic growth based on consumption and remittances exposes the national economy to a series of vulnerabilities. They key challenges for a sustainable economic growth, in my view are:

- **The structural change of the national economy**. With no structural change applied to national economy – the rhythm of economic growth is basically unacceptable, considering the agenda of the economic development of the Republic of Moldova;
- **Changing the model of economic growth**. Replacing the current sluggish model of economic growth based on consumption and remittances for a dynamic model based on investments, innovation and the development of energy infrastructure.

The development and implementation of a comprehensive energy development programme that includes strengthening the country's energy security and diversification of supply sources will provide a solid foundation for an average of 3 - 3.5% economic growth per year in the next 10 years or so.

Until de economic development paradigm is changed, the Republic of Moldova must continue to seek financial support from the development partners. This support should cover the necessary actions to promote relevant energy policies. Obviously, this approach requires sustainable external assistance on attractive financial terms.

Another weakness of the national energy sector – is its sustainability. For a long time energy sector remained highly inefficient, underfunded and dependent on external sources of supply. In times of rising geopolitical risks and when the competitiveness of an economy depends largely on energy efficiency, it is critical to have a prompt economic mechanism that can solve these issues coherent manner. In case of the Republic of Moldova this mechanism is the integration into the European energy markets. The integration will help develop an energy market that is efficient, competitive and less dependent on gas imports for the east.

Based on a fact analysis of the gas, electricity and renewable energy markets, as well as, the energy efficiency in the Republic of Moldova, the following conclusions were drawn:

1. The legal regulatory framework of the energy sector complies with the commitments undertaken under the Association Agreement, the Treaty Establishing the Energy Community and the best European practices. However, the process of adjusting the national legislation needs to be dynamic, transparent and consistent with the acquis communautaire.

The most difficult issue is the certification/separation of the gas TSO gas and the reorganization of Moldovagaz and its subsidiaries.

2. The vulnerability of the energy security of the Republic of Moldova is based on the following internal and external factors: a) the limited capacities of the state to supervise this sector; b) the poor management of the state energy companies; c) the lack of financial resources for infrastructure development; d) the enormous historical debts; e) the delayed and politicized tariffs; f) the heavy dependence on a single supply source, etc. The lack of viable import alternatives narrows the state ability to negotiate a more competitive import price. As a result, the state is forced to stay on alert and assume a crisis scenario prompted by limited energy sources and high energy prices that can cause negative economic effects (a decline a purchase power, rising poverty rate, etc).

3. The share of gas and electricity in the total energy consumption is quite high, therefore the households and industrial companies are exposed to external and political factors that influence the price. Moreover, the lack of alternative energy sources or internal reserves increases the vulnerability of the state.

4. The development and use of renewable resources as well as improved energy efficiency is a strategic objective that should be open to new investment opportunities. However, this does not reduce the risks related to the energy market.

5. The only option of overcoming the systemic crisis of the energy sector is to implement the necessary regional interconnections of gas and electricity and integrate the national market into European energy market as soon as possible.

6. The Republic of Moldova has an historic opportunity to develop and extend its interconnections at the regional level and to capitalize on the opportunities offered by international energy projects (South Stream, BRUA, etc.). The security of electricity supply can be ensured by a consolidated and balanced transmission system, extended interconnection capacities with neighbouring countries, the interconnection with ENTSO-E, diversification of electricity networks and sources of electricity supply from outside.

7. Strengthening the internal potential of electricity and heat production, through the development, reconstruction and renovation of energy generation capacities, the promotion of renewable energy sources, high efficiency cogeneration and SACET is an important internal reserve that needs to developed and capitalized.

8. The renewable resources and energy efficiency are not fully explored by the state and market participants. There is a large potential for their development. It is up to state authorities to draft and approve the secondary legal framework and financially support their implementation. The renewable energy sources are a viable solution to reduce the electricity and heat consumption.

RECOMMENDATIONS

In the context of heavy dependence on energy imports, delays in the implementation of the Third Energy Package (especially the gas sector), lack of progress in the development of interconnections with the European market - it is necessary for the Republic of Moldova to prioritize its actions taking into account its key strategic objectives.

The authorities must draw a long-term state energy strategy for 2040 or as far as 2050. The basic principle applied is the liberalization of the entire energy sector and unconditional adoption of European principles and standards.

For the short and medium term - it is strongly recommended to fully implement the commitments undertaken in the Association Agreement and the Third Energy Package, in terms of drafting and implementing secondary legislation and finalizing the reorganization of the gas sector.

Taking into account the technical and financial possibilities of the state, the political and economic conditions, we do believe that the priority is to develop the interconnections with the European market, the production of energy from renewable sources and the implementation of energy

efficiency projects for public utility buildings and domestic consumers. It is extremely important to identify financial resources and use the tax instruments to stimulate the actions mentioned above.

The state must also attract investments to develop a research that would help find and extract of crude oil and gas in the southern part of the country.

Since 1991 gas has been a strong tool used by the Russian Federation to influence the political and economic life of the Republic of Moldova. It is extremely important for the legislative, executive and security leadership to analyse and treat this issue as national security priority.

The Government and the Parliament should take immediate actions related to gas market by introducing the necessary amendments to the legislation and national security. This subject must be part of the bilateral agenda of the Republic of Moldova with Ukraine and Romania, as well as the energy market agenda with European Union, United States and other partners.

Resolving the gas supply security issue will help the country avoid exporting its energy risks to its neighbours and create a predictable business environment for foreign investors.

It is also necessary to make use of all opportunities offered by the EU in order to diversify the gas and electricity sources of supply, diversify the energy mix and decrease the share of gas the total energy consumption.

At the same time, all internal and external mechanisms should be used to liberalize the national energy market, provide access to all market players and attract investments.

Given that such legal, competitive and economic goals are achieved it is simply inevitable for large-scale projects in gas and electricity to be successful.

In the electricity sectors the major projects to be implemented are: a) the construction of Isaccea-Vulcanesti-Chisinau interconnection and the back-to-back station until 2023; b) Suceava-Balti interconnection and Iasi-Straseni interconnection until 2025.

In the gas sector the priority is to put into use Iasi-Ungheni-Chisinau gas pipeline and build-up the back-to-back connection with on one of the 3 gas pipelines in the Trans-Balkan corridor.

A series of investment projects can be directed to capitalize on energy production from renewable sources. The investor might look into the government goals of increase the share of renewable energy resources to 20% in the energy resources mix.

The goal of these recommendation is to analyse and act on consolidating the national strategic objectives of the Republic of Moldova, including the objectives set in the Strategy for a low-emission development of the Republic of Moldova until 2030.

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