

Annex No. 1

to the Order of the Ministry of Economy and Infrastructure

No. 363 of 31.12.2019

Security of Supply Statement



**Ministry of Economy
of the Republic of Moldova**

Chisinau 2019

ACRONYMS

NAER	National Agency for Energy Regulation
CPA	Central Public Authorities
LPA	Local Public Authorities
EIB	European Investment Bank
EBRD	European Bank for Reconstruction and Development
BG	Bulgaria
CAIDI	Customer Average Interruption Duration Index
EC	Energy Community
CHP	Combined heat and power plant
CIS	Commonwealth of Independent States
ENTSO-E	European Network of Transmission System Operators for Electricity
E-SER	Electricity From Renewable Energy Sources
FEE-Nord	“Furnizarea Energiei Electrice Nord” JSC
RF	the Russian Federation
GNFFE	ICS Gas Natural Fenosa Furnizare Energie SRL (Gas Natural Fenosa Furnizare Energie LLC Foreign Capital Company)
IPS/UPS	Integrated Power System (Ukraine, Kazakhstan, Kyrgyzstan, Belarus, Azerbaijan, Tajikistan, Georgia, Moldova and Mongolia) / Unified Power System (Russia)
SE	State Enterprise
OPL	Overhead Power Line
MGRES	Moldavian GRES (Kuchurgan Thermal Power Station)
MD	Republic of Moldova
MDL	Moldavian lei
MEI	Ministry of Economy and Infrastructure
DSO	Distribution System Operator
TSO	Transmission System Operator
NAPEE	National Action Plan for Energy Efficiency
RED	Electricity Distribution Network
RM	Republic of Moldova
RO	Romania
SA	Joint Stock Company
PJSC	Public Joint Stock Company
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
ESM	Electricity System of Moldova
RES	Renewable Energy Sources
GMS	Gas Metering Station
NNGTC	National Natural Gas Transmission Company
SRL	LLC (Limited Liability Company)
TK	Turkey
UA	Ukraine
UCTE	Union for the Coordination of the Transmission of Electricity
UE	European Union

INTRODUCTION

According to the provisions of the Law on electricity and the Law on natural gas, the Government of the Republic of Moldova has the obligation, by means of the central specialized body of the public administration in the field of energy, to monitor the security of supply of the electricity and natural gas to the final consumers and every 2 years to draw up a Monitoring Report which shall be submitted to the Energy Community Secretariat.

The last Security of Supply Statement for the period 2013-2015 was approved by *Government Decision No. 454/2017 on the implementation of certain provisions of the Law No. 107/2016 on electricity and of the Law No. 108/2016 on natural gas*.

This Report contains the results of monitoring the situation of the electricity and natural gas market for the period 2017-2018, describing the measures taken in the energy sector, the capacity of the energy system of meeting the existing demand, the investment projects concerning the building and putting into function of new interconnections, the normative and regulatory framework, etc.

The security of energy supply is a challenge not only for the Republic of Moldova, but also for other states of Europe. The main concerns raised by the risks associated with the dependence on external sources, with an unstable political situation in the countries of the external suppliers and in the transit countries and with the potential disruptions in the energy supply. It should be also acknowledged the fact that the transformations that take place within the energy system, as a result of change in the structure of demand and of the extension of the use of renewable energy sources, creates new challenges for the continuous energy supply to the end users at an affordable price.

The drawn up primary and secondary normative framework has been aimed to transpose the *acquis communautaire* in the field of energy and to implement the measures taken in the framework of the energy policies that would ensure the security of the country's energy supply.

Monitoring results statements regarding supply of energy resources of the country are rendered by means of the following statistical data.

1. The energy balance of the Republic of Moldova (without Transnistria)¹ for the last available year, 2018, is rendered in Figures 1-4.

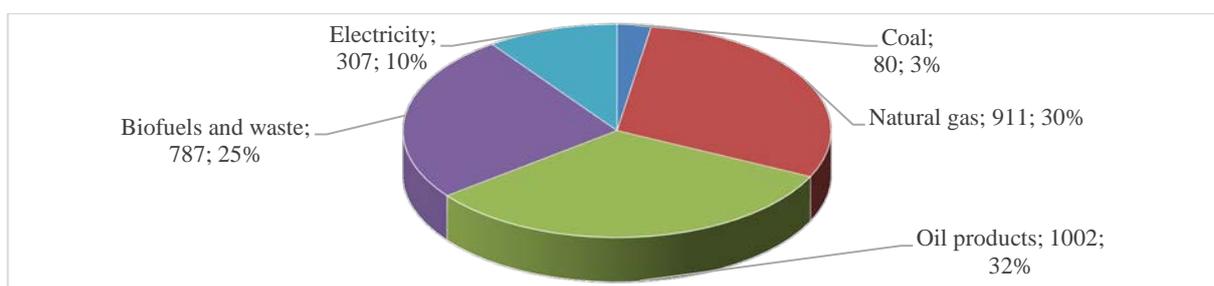


Figure 1. Total amount of primary energy supply by energy types (1000 toe; %)

The oil products and natural gas are the predominant energy resources of the country's total amount of primary energy supply, (32% and 30% respectively). The natural gas is 100% imported from the

¹ Source: National Bureau of Statistics. The energy balance does not include the data of the economic agents located in the territory on the left side of the Dniester River and the municipality of Bender (Transnistria).

Russian Federation (Gazprom) and the oil products are imported from Romania, Belarus, the Russian Federation and other countries. Biofuel and waste represent 25% and coal and electricity represent 3% and 10% respectively. Taking into consideration the import of primary energy resources, the energy dependence of the Republic of Moldova on external sources is very high, of about 75%.

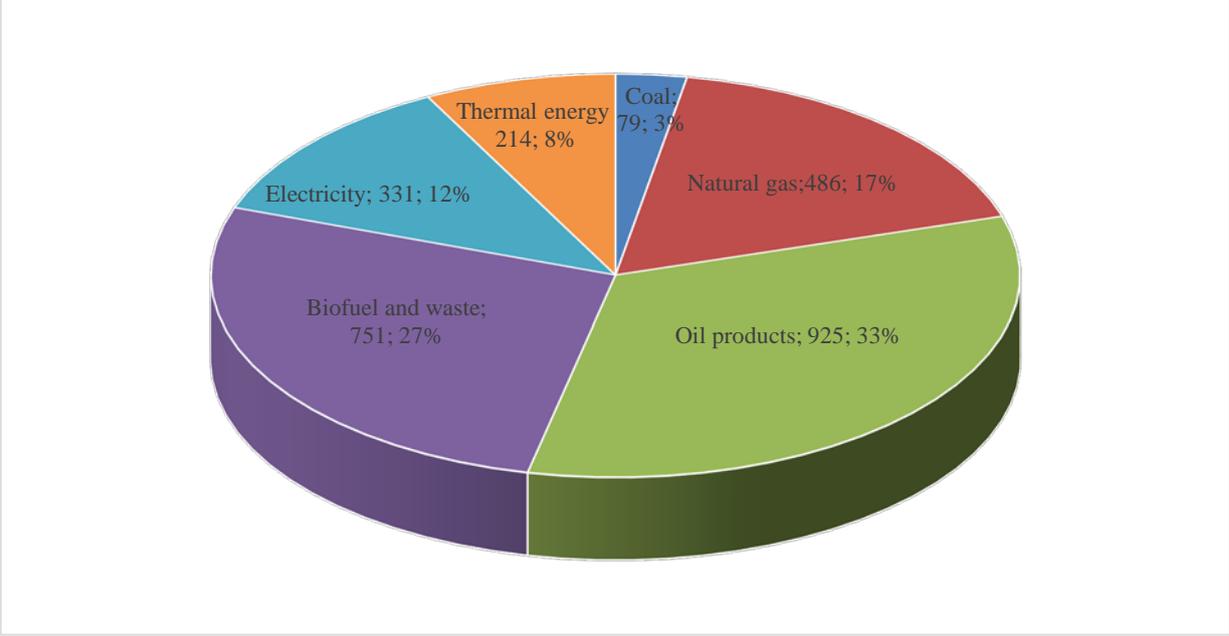


Figure 2. Total amount of final energy consumption by energy types (1000 toe; %)

At the level of final energy consumption, the oil products represent the highest share (33%), being followed by the biofuels and waste (27%) and the natural gas (17%). Electricity has a share of 12%, the thermal energy supplied by means of the centralized supply systems - 8% and the coal - 3%.

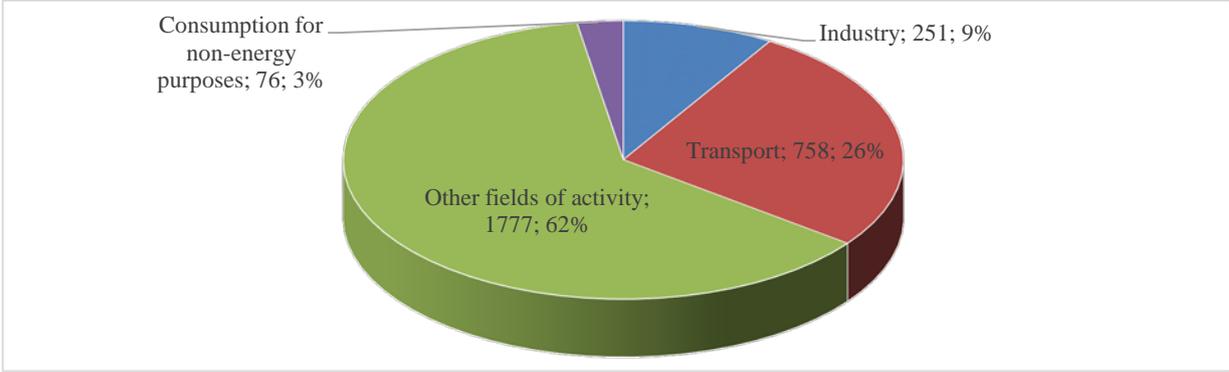


Figure 3. Total amount of final energy consumption by fields of activity (1000 toe; %)

The total amount of final energy consumption by fields of activity shows that 9,09% of the energy is consumed in the field of industry, 26,0% in transport and 62% in other fields of activity, which specific areas are shown in the Figure 4.

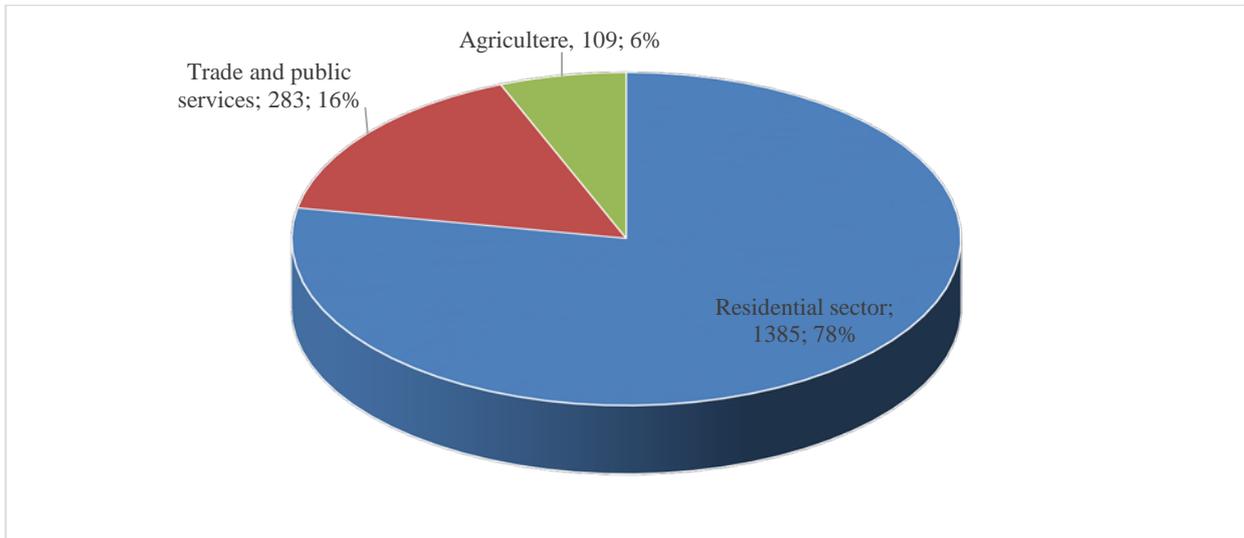


Figure 4. Amount of final energy consumption in other fields of activity (1000 toe; %)

The section “Other fields of activity” includes mostly the residential sector, which represents 78% of the total amount of final consumption, being followed by “Trade and public services” - 16% and by “Agriculture” - 6,2%.

2. Generally speaking, the energy sector of the Republic of Moldova contains certain vulnerabilities. High dependence on the imported natural gas and electricity, historical debts, outdated electric and thermal energy generation systems, inefficient centralized thermal energy supply systems, alongside with the tariffs established in the past, which have not fully reflected the costs incurred by the energy companies, have led to poor performance of the energy field in present.

3. The Republic of Moldova is a transit country and an energy importer, as has been mentioned above, with only 26% of the primary energy demand being satisfied by means of the energy resources located on the right side of the Dniester River. Such a major dependence on energy resources makes the country's economy vulnerable to any external disruption in the country's energy supply, to fluctuations in energy prices, with a high degree of unpredictability in the future. The existing situation also represents a threat to the social security and a serious risk to the sustainable development of the national economy.

4. The Republic of Moldova does not own traditional energy resources, such as coal and oil and the potential of renewable energy sources is not fully exploited. The biomass is considered the one of the most important sources of renewable energy, which can be exploited for energy purposes.

5. According to the Energy Strategy of the Republic of Moldova until 2030 (hereinafter the *Energy Strategy*) the main energy fields that have to be developed in the future remain the same, such as electricity, natural gas, thermal energy, energy from renewable sources and the energy efficiency.

6. The electricity system of the Republic of Moldova works as a part of IPS / UPS (Figure 5), an electricity system that is not synchronized with the ENTSO-E (UCTE) system of the Continental Europe, fact that prevents the Republic of Moldova from accessing the internal electricity market of the EU and represents a serious impediment to investments in the energy generation in the Republic of Moldova and in the consolidation of the electricity transmission network towards the Energy Community and the EU.

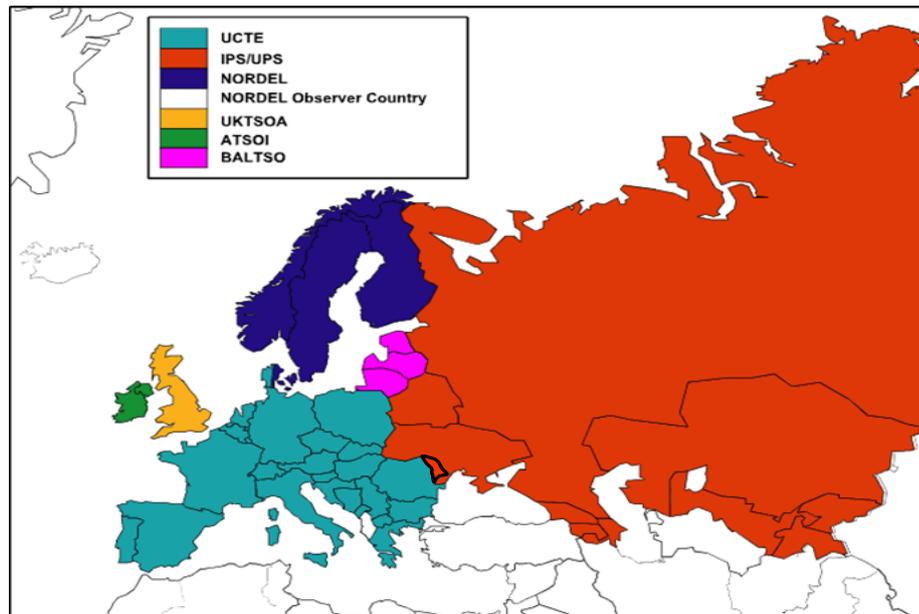


Figure 5. Main synchronous transmission networks in Europe and CIS

7. The diversification of the country's supply with primary energy is quite low, for example, natural gas represents about 30% of the total amount of primary energy, being supplied by the Russian Federation through Ukraine and the left side of the Dniester River (Transnistria). It is mainly consumed by the energy companies (CHPs and heat boilers) - 42%, being followed by the residential field – 31,4%, the industrial field – 8,3% and by trade and public services – 10,5%.

8. The territory of the Republic of Moldova represents an important transit route through which the natural gas supply is ensured at a regional level (transit of the Russian gas through Ukraine and the Republic of Moldova towards Romania, Bulgaria, Turkey and Macedonia). In 2014, the construction of a new interconnection with Romania (the Iasi-Ungheni gas pipeline) was completed, but in order to ensure the operation of the interconnection at its full capacity, the construction works of the Ungheni - Chisinau gas pipeline, carried out by the external private investor, Transgaz, Romania, were initiated in 2019.

9. The natural gas import and supply are carried out by Moldovagaz JSC, “Gazprom” PJSC from the Russian Federation as the majority shareholder. As a result of the existence of a single source of natural gas import and supply at the regulated tariffs, according to the NAER Decision No. 408/2011, the natural gas market of the Republic of Moldova is considered to be non-competitive.

10. In the conditions of insufficient internal energy resources, the energy efficiency is a cornerstone of the future Energy Strategy and the improvement of the energy efficiency is one of the activities that can be monitored by the state. However, in order to protect the progress and to support the sustainable development, the country needs a strong institutional framework, which has to be achieved by means of a mechanism of a well-argued administrative reform, of capacity-building and development and, finally, by means of the support rendered by development partners for the consolidation of policies and plans, as well as for their implementation.

As regards the energy efficiency policies, the first National Action Plan in Energy Efficiency (NAPEE) for 2013-2015 was approved in February 2013. In December 2016, the Government approved the second NAPEE for the period 2016-2018. The NAPEE for the period 2019-2021 was approved at the Government meeting on 27 December 2019.

The Energy Efficiency Agency, created as a result of the reorganization through fusion (absorption) with the Energy Efficiency Fund, has the mission to implement the state policy in the field of energy efficiency, the energy performance of buildings, as well as the use of renewable energy sources, including by attracting and managing financial resources in order to finance the projects in the corresponding fields in a sustainable way considering the environment and climate change.

As regards the renewable energy sources, according to the available data, the global technical potential of the RES is estimated at 113,4 PJ, of which the solar energy (50,4 PJ) and the wind energy (29,4 PJ), which represents about 70% of the total potential of the RES, while the rest is represented by the biomass (21,5 PJ, or 19%) and hydro energy (12,1 PJ, or 11%). However, it is necessary to study which technologies are suitable for placing on the renewable sources energy market and which have to be promoted by means of state-coordinated stimulation systems in order not to endanger the technical stability of the electricity system of Moldova, as well as not to lead to a substantial and rapid increase in electricity tariffs, fact which may cause social problems and/or may not be justified from the economic point of view in the Republic of Moldova.

11. This report is based on the data and information available for the year 2018, which includes only the territory of the right side of the Dniester River, taken from the annual reports of the National Bureau of Statistics and NAER.

I. ELECTRICITY SECTOR

12. The description contained in this section refers only to the electricity sector of the Republic of Moldova, excluding Transnistria, taking into account that the electricity sector of this region is not monitored by the state institutions of the Republic of Moldova. It shall be mentioned the fact that only one participant on the electricity market of the Transnistrian region has applied for and has obtained the license issued by the NAER, namely the MGRES enterprise - license for electricity production.

1.1. Participants on the electricity market and their roles

13. The central specialized body of the public administration in the energy field is the *Ministry of Economy and Infrastructure* that according to the Law on Energy is responsible for the administration of the energy sector and mainly for drafting public policies in the energy sector and for the development of the legal framework. The MEI is responsible for:

- a) drafting and promoting state policies and strategies in the energy sector;
- b) drafting concepts and programs for the development of the energy sector;
- c) monitoring the application of development and investment programs;
- d) drafting normative acts in the field of energy;
- e) promoting, within the limits of competence, regional and international cooperation in the field of energy, including cooperation on strategic energy acquisition, attracting investments, expanding energy interconnections and integration of the energy markets of the Republic of Moldova into regional and international markets;
- f) management of state property in the field of energy;
- g) promoting competition and limiting monopoly activity in the energy sectors.

14. The National Agency for Energy Regulation is the regulatory public authority with the status of legal entity that does not subordinate to any other public, or private authority. NAER, as an independent authority that supports the introduction of market mechanisms in the energy sector and

regulates the sector, protecting at the same time the interests of the customers and of the investors, has the following competences:

- a) supervises compliance with laws and regulations in the field of energy;
- b) promotes and ensures fair competition and the efficient operation of the energy markets, monitors the level of market opening and the efficiency of competition in the wholesale and retail energy markets;
- c) issues licenses for energy market activities (according to the Law on natural gas, the Law on electricity, the Law on thermal energy and promotion of cogeneration, the Law on promoting the use of energy from renewable sources and the Law on the oil products market);
- d) monitors compliance with the license conditions and applies the provisions of the aforementioned laws;
- e) monitors the investment plans of the system operators;
- f) establishes and approves standards and requirements for transmission, distribution and supply services;
- g) promotes the appropriate tariff policy according to the interests of both producers and consumers;
- h) approves the regulated tariffs, calculated on the basis of the approved methodologies and monitors their application;
- i) supervises the application of the necessary and justified cost principles by the regulated operators for the regulated activities;
- j) monitors the rights and ensures consumer protection, etc.

The specific role of the NAER in ensuring the security of supply consists in approving the costs of the maintenance of the energy system and of the investments planned by the transmission and distribution companies, as well as the establishment of regulated tariffs at a level corresponding to the level of the system development.

15. The Competition Council is the authority that ensures the proper implementation of the provisions of the Law on Competition.

16. *Electricity industry.* The main market participants are the enterprises within the electricity system, the following legal entities:

16.1. The production is carried out by:

- a) CHP Termoelectrica JSC in Chisinau;
- b) CHP-Nord JSC in Balti;
- c) Nodul Hidroenergetic Costesti State Enterprise;
- d) MGRES;
- e) Thermal Power Station in the sugar industry;
- f) 58 power stations that generate energy from RES (RES-E).

Termoelectrica JSC and CHP Nord JSC are the regulated producers of electricity and thermal energy.

16.2. Transmission (including the central dispatch): Moldelectrica Public Enterprise is the sole operator of the electricity transmission system (TSO) of the Republic of Moldova, which provides services of electricity transmission and centralized management of the electricity system of the Republic of Moldova.

Moldelectrica State Enterprise manages the internal transmission network on the right side of the Dniester River. As regards the supply security, TSO is responsible for:

- a. providing the auxiliary services (backup, frequency-load control and balancing of electricity flows) necessary for the operation of the electricity system;
- b. dispatching the electricity system;
- c. congestion management;
- d. purchasing of electricity in order to cover the losses of electricity within the transmission networks;
- e. development and maintenance of the electricity transmission system;
- f. connecting/disconnecting users to/from the transmission network.

The transmission activity, as well as the applied tariffs, are regulated by the NAER.

16.3. The distribution has been carried out by 2 distribution system operators (DSO): RED Nord (state enterprise) and RED Union Fenosa (private), the latter covering about 70% of the territory of Moldova (without Transnistria). As regards the security of supply, DSO is responsible for:

- a) dispatching electricity generation units connected to the distribution system;
- b) purchasing electricity in order to cover the losses of electricity within the distribution networks;
- c) development and maintenance of the electricity distribution system;
- d) connecting/disconnecting users to/from the distribution network.

It should be pointed out that, by means of the Government Decision No. 605/2017 on the Reorganization of Some Joint Stock Companies it has been approved the reorganization of Retele Electrice de Distribuție Nord JSC by fusion (absorption) with Retele Electrice de Distribuție Nord-Vest JSC (as an absorbed company).

The purpose of the merging the joint stock companies RED Nord and RED Nord-Vest is to create in the north of the country a single company providing electricity distribution services, which would lead to an increased labour efficiency, optimization of operational expenses, creation of conditions for establishing relevant tariffs for electricity distribution services, which would be equal for all the consumers in this region.

16.4. As of 20.12.2019 on the electricity market there are 30 electricity supply licensees. Many of them are not active on the electricity market.

The main suppliers on the electricity market of the Republic of Moldova that have activated during the reporting period are:

- a) Gas Natural Fenosa Furnizare Energie LLC Foreign Capital Company created as a result of the separation of the activities of SCS RED Union Fenosa JSC (separation of distribution and supply activities, in accordance with the Law on Electricity (which transposes the separation obligation from the EU Directive 2003/54 / EC) ;
- b) Furnizarea Energiei Electrice Nord JSC founded as a result of the separation of the activities of RED Nord and RED Nord-Vest (separation of distribution and supply activities).

The both companies act as suppliers of last resort in the corresponding area of supply.

It should be pointed out that in December 2019, the energy companies supplying and distributing electricity, Gas Natural Fenosa Furnizare Energie LLC FCC and RED Union Fenosa JSC FCC

changed their names and logos according to the new trademarks Premier Energy LLC FCC and Premier Energy Distribution JSC FCC.

In order to ensure the fulfilment of the provisions of the Law on electricity, the Law on promoting the use of energy from renewable sources and the Law on thermal energy and promotion of cogeneration, the enterprise Energo JSC was appointed as a central electricity supplier until 01 January 2021 by Government Decision No. 885 of 01.11.2017.

16.5. Mixed functions (network/generation) are carried out by Dnestrenergo JSC, the company from Transnistria that manages the Eastern side (the left side of the Dniester River) of the electricity networks and the Dubasari Hydroelectric Power Station, which are not regulated by the institutions of the Republic of Moldova;

16.6. The final consumers: since 01 January 2015, all the final consumers are declared eligible and have the right to purchase electricity from any producer, or supplier, including from abroad.

Thus, 5 licensed producers, 1 transmission system operator, 2 distribution system operators and 30 licensed suppliers operate on the electricity market of the Republic of Moldova.

1.2. Main legal and regulatory framework of the sector

17. In order to promote the development of the electricity sector, the normative framework has been constantly developed in the recent years, having the clear objective of its harmonization with the European framework and the *acquis communautaire* in the field of energy.

18. The Law on electricity No. 107/2016, transposing the Directive 2009/72 / EC concerning common rules for the internal market in electricity and repealing the Directive 2003/54/ (Third Energy Package), established the basic normative framework, in particular by means of:

a) defining the competences of the governmental authorities and the objectives, duties, powers and rights of the NAER;

b) defining the tasks and responsibilities of the producers, transmission system operators, distribution system operators and of the electricity suppliers.

c) defining the concept of public service obligation and the basic rules for imposing such obligations, which may refer to security, including security of supply, regularity, quality and the price of supplies, as well as to the environmental protection, including energy efficiency, energy from renewable sources and environmental protection;

d) separation, appointment, certification and independence of the transmission and distribution system operator;

e) developing networks and competencies in order to make investment decisions;

f) defining the concept of consumer protection and first of all, of vulnerable consumers in terms of energy poverty;

g) defining market organization, market liberalization and third party access to the transmission and distribution systems.

19. Law on promoting the use of energy from renewable sources No. 10/2016, transposing the Directive 2009/28 / EC of 23 April 2009 of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC is important for solving the problems related to RES-E, which can also have an impact on the security of the electricity supply.

20. The Law on thermal energy and promotion of cogeneration No. 92/214 has partially transposed the Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending the Directives 2009/125/EC and 2010/30/EU and repealing the Directives 2004/8/EC and 2006/32/EC. This law provides, also, the transfer of regulatory powers in the thermal energy sector (such as approval of tariffs for activities carried out in the thermal energy sector) from the local authorities to the NAER.

21. The Law on energy efficiency No. 139/2018, transposing the Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending the Directives 2009/125/EC and 2010/30/EU and repealing the Directives 2004/8/EC and 2006/32/EC regulates the activities intended to optimize both production and use of energy, to increase the country's energy security and to reduce the negative impact of the energy sectors on the environment by reducing greenhouse gas emissions.

22. In addition to the primary legislation, there are a number of secondary normative acts approved by the NAER, in particular regarding such issues as licensing, market rules, investments, tariffs, customer protection, access and connection to the electricity network, energy contracting, supplying and billing, guarantees of origin for energy produced from renewable sources.

23. As a result of the adoption of the Law on electricity and the Law on promoting the use of energy from renewable sources, some normative acts of the NAER have been modified in accordance with the primary legislation and other new normative acts have been developed and implemented in order to ensure a proper implementation of these laws.

24. Recently, the Regulation on Exceptional Situations on the Electricity Market and the Action Plan for exceptional situations on the electricity market (Government Decision No. 149/2019) have been approved. The Regulation has established measures necessary to ensure the correct and continuous operation of the competitive internal electricity market and the implementation of non-discriminatory, transparent and specific procedures in order to guarantee the security of electricity supply in the event of exceptional situations on the electricity market. The action plan describes in detail the procedure that has to be followed in relation to establishing the emergence of an exceptional situation, the role and the actions necessary to be taken by each participant on the electricity market, as well as the authorities involved in the prevention and management of exceptional situations on the electricity market.

1.3. Electricity balance (2016 - 2018)

25. The selected elements of the electricity balance for the period 2016 - 2018 are rendered in the Table 1.

Table 1. Electricity balance for the period 2016 - 2018

No.	Category	2016		2017		2018	
		GWh	% of the total amount	GWh	% of the total amount	GWh	% of the total amount
1	The local production - total amount	754,6	100,0	747,4	100,0	804,2	100,0
	Out of which:						
	<i>Termoelectrica JSC</i>	<i>640,6</i>	<i>84,9</i>	<i>619,3</i>	<i>82,9</i>	<i>651,0</i>	<i>80,9</i>
	<i>CHP-Nord JSC</i>	<i>54,6</i>	<i>7,2</i>	<i>48,4</i>	<i>6,5</i>	<i>53,9</i>	<i>6,7</i>
	<i>Nodul Hidroenergetic Costesti</i>	<i>38,6</i>	<i>5,1</i>	<i>46,9</i>	<i>6,3</i>	<i>43,7</i>	<i>5,5</i>

	<i>Other internal producers</i>	20,7	2,8	32,8	4,3	55,5	6,9
2	Purchase and import - total amount	3346,8	100,0	3412,5	100,0	3499,7	100,0
	out of which from:						
	<i>MGRES</i>	3343,1	99,9	2278,6	66,8	2543,9	72,7
	<i>Ukraine</i>	3,7	0,1	1133,9	33,2	955,8	27,3
3	The total amount of produced and purchased electricity, including	4101,4	100,0	4159,0	100,0	4303,9	100,0
	<i>RED Union Fenosa</i>	237,5	5,8	234,9	5,6	243,2	5,7
	<i>GNF Furnizare Energie</i>	2684,3	65,4	2704,4	65,0	2767,6	64,3
	<i>RED Nord</i>	53,1	1,3	53,2	1,3	85,0	2,0
	<i>RED Nord-Vest</i>	31,6	0,8	29,5	0,7	-	-
	<i>FEE Nord</i>	919,0	22,4	933,1	22,5	970,0	22,5
	<i>Moldelectrica State Enterprise</i>	110,1	2,7	111,3	2,7	112,9	2,6
	<i>Consumers who made use of eligibility</i>	65,7	1,6	92,6	2,2	125,1	2,9
4	Consumption of electricity - total amount	3669,1	100,0	3730,0	100,0	3862,7	100,0
	out of which:						
	a) non-household consumers	2035,8	55,5	2094,3	56,1	2225,2	57,6
	B) household consumers	1633,3	44,5	1635,7	43,9	1637,5	42,4
	or the total amount supplied to the final consumers, including:						
	<i>GNF Furnizare Energie</i>	2684,3	73,2	2704,3	72,5	2767,6	71,7
	<i>FEE Nord</i>	919,0	25,0	933,1	25,0	970,0	25,1
	<i>Consumers who made use of eligibility</i>	65,7	1,8	92,6	2,5	125,1	3,2
5	Losses of electricity:						
	within the transmission networks		*2,7		*2,7		*2,6
	within the distribution networks		**8,5		**8,3		**8,3

* in % in comparison with the electricity at the points of entry into the electricity transmission network

** in % in comparison with the electricity at the points of entry into the electricity distribution network

26. During 2016-2018, the electricity consumption in the Republic of Moldova was constantly increasing. In 2017, the consumption increased by 1,7% in comparison with 2016 and in 2018 it increased by 3,6% in comparison with 2017. During this period, the electricity consumption increased by 3,9% (2018 / 2015). The most significant increase in electricity consumption was registered in the non-household sector – 9,3%. In this period the consumption by domestic consumers increased by 0,25%.

27. All electricity demand during this period was covered by local production and by import. The annual local production during this period was about 755-804 GWh. In this order, it is necessary to take into consideration the fact that the local electricity production remains well below the consumption level, the domestic production (the right side of the Dniester River), which covers only 18,7% of the demand, remaining at the same level as in the previous years. Such situation indicates the state of high dependence on imports and acquisitions from Transnistria and vulnerability, as regards the security of supply, despite the fact that, during this period, the domestic production has increased. In 2017, the local production decreased by 1,0% in comparison with 2016, while in 2018 it increased by 7,6% in comparison with the previous year. Referring to the producers of electricity, we note that in 2018 the increase of the amount of electricity produced by the domestic producers was caused by the increase of the electricity production by the CHPs and by the power stations that

produce electricity from renewable sources. As in the previous periods, the main share of local production belongs to CHPs producers (more than 87%).

28. The rest of the demand for electricity is generally covered by the import from Ukraine and purchases from MGRES. During this period, approximately 79,6% of the total amount of electricity purchased, or 65,0% of the total demand of the Republic of Moldova, was purchased from MGRES. In the period 2016 - 2018 there were imported from Ukraine 2093,4 GWh (20,4% of the total amount of electricity purchased, or 16,7% of the total demand). Thus, in 2017, the import of electricity from Ukraine increased up to 1133,9 GWh, which constitutes 306 times more than the amount of electricity imported in 2016. In 2016, imports from Ukraine were practically stopped and increased only up to 3,7 GWh (0,03% of the demand of the Republic of Moldova).

29. This situation can be improved only in the medium term of 3-5 years. As a result of the low availability level of national fossil fuel resources and of the country's geopolitical situation, in addition to the limited use of energy from renewable energy sources for electricity production, the Energy Strategy does not take into account the diversification of fossil fuels for electricity production until 2030.

30. Another risk to the security of supply is represented by the rather limited level of technical reliability and, consequently, of the availability level of the existing power stations and CHPs, due to the high level of wear of the installations. All the power stations and CHPs are at least 30-50 years old. The very high rate of wear of the energy production and transmission installations (transmission and distribution) has severe negative effects on both the technical performance (such as availability of capacity, efficiency of fuel conversion, dependence on thermal load, problems associated with tariff approval), as well as the economic performance of the energy installations, thus representing the risk to the security of supply.

1.4. Existing capacities of the electricity system

1.4.1 Electricity generation

31. The main producers of electricity in the Republic of Moldova are:

a) MGRES (1964-1982), located in Transnistria, 2520 MW, operates by means of coal, natural gas and heavy fuel oil, with an installed capacity of 2520 MW / available capacity of about 1700 MW, owned and operated since 2005 by Inter RAO EES Corporation from the Russian Federation;

b) Termoelectrica JSC, that includes:

- Source No. 1 (CHP-2 from Chisinau) operates by means of natural gas, having the installed capacity of 240 MWe and the installed thermal capacity of 1200 Gcal/h, with the maximum available thermal capacity of 740 Gcal/h;
- Source No. 2 (CHP-1 from Chisinau) (1951-1961) operates by means of natural gas, having the installed capacity of 66 MWe and the installed thermal capacity of 239 Gcal/h.

c) CHP-Nord from Balti (1956-1970) operates by means of natural gas, having the installed capacity of 24 MWe / the available capacity of 24 MWe and the installed thermal capacity of 342 Gcal/h, out of which 200 Gcal/h is the capacity of the two boilers for thermal energy. Due to the fact that the existing equipment of the station is not outdated, it is considered that the available thermal energy capacity is approximately the same as the installed one, however the thermal load has significantly decreased in comparison with the designed capacity. CHP-Nord operates only during the cold period of the year, for a period of about 5-6 months, due to the lack of demand for thermal energy.

d) 7 CHPs installed at sugar factories (1956-1981) operate by means of natural gas and oil fuel, having the installed capacity of 98 MWe / the available capacity for the electricity network of about 20 MWe (the rest is for internal consumption);

e) The Dubasari Hydroelectric Power Station (1954-1966) from Transnistria, having the installed capacity of 48 MW / the available capacity of 48 MW;

f) The Costesti Hydroelectric Power Station (1978), having the installed capacity of 16 MW / the available capacity being also of 16 MW. However, usually, when this power generating unit is operating, its capacity is not greater than about 10 MW due to the low water flow;

g) 58 producers owning power stations that produce electricity from RES, with a total installed capacity of about 37,4 MW, for which the NAER has approved tariffs.

32. The evolution of the electricity production from renewable energy sources (solar energy, wind energy and biogas produced from biomass) and of the installed capacity during the years 2011-2018 in units which use renewable energy sources are shown in the Figure 6.

The total installed capacity of all the power stations producing RES-E is of about 37,4 MW (2,1 MW - solar energy; 29,3 MW - wind energy; 5,7 MW - energy from biomass (biogas) and 0,25 MW - hydro energy). The electricity produced from biogas holds the highest share in the total amount of the electricity produced from RES in 2018 (54,1% of the total amount of electricity produced from RES), followed by the electricity produced from wind energy (42,5 %) and, correspondingly, by the electricity produced from solar energy (2,8%).

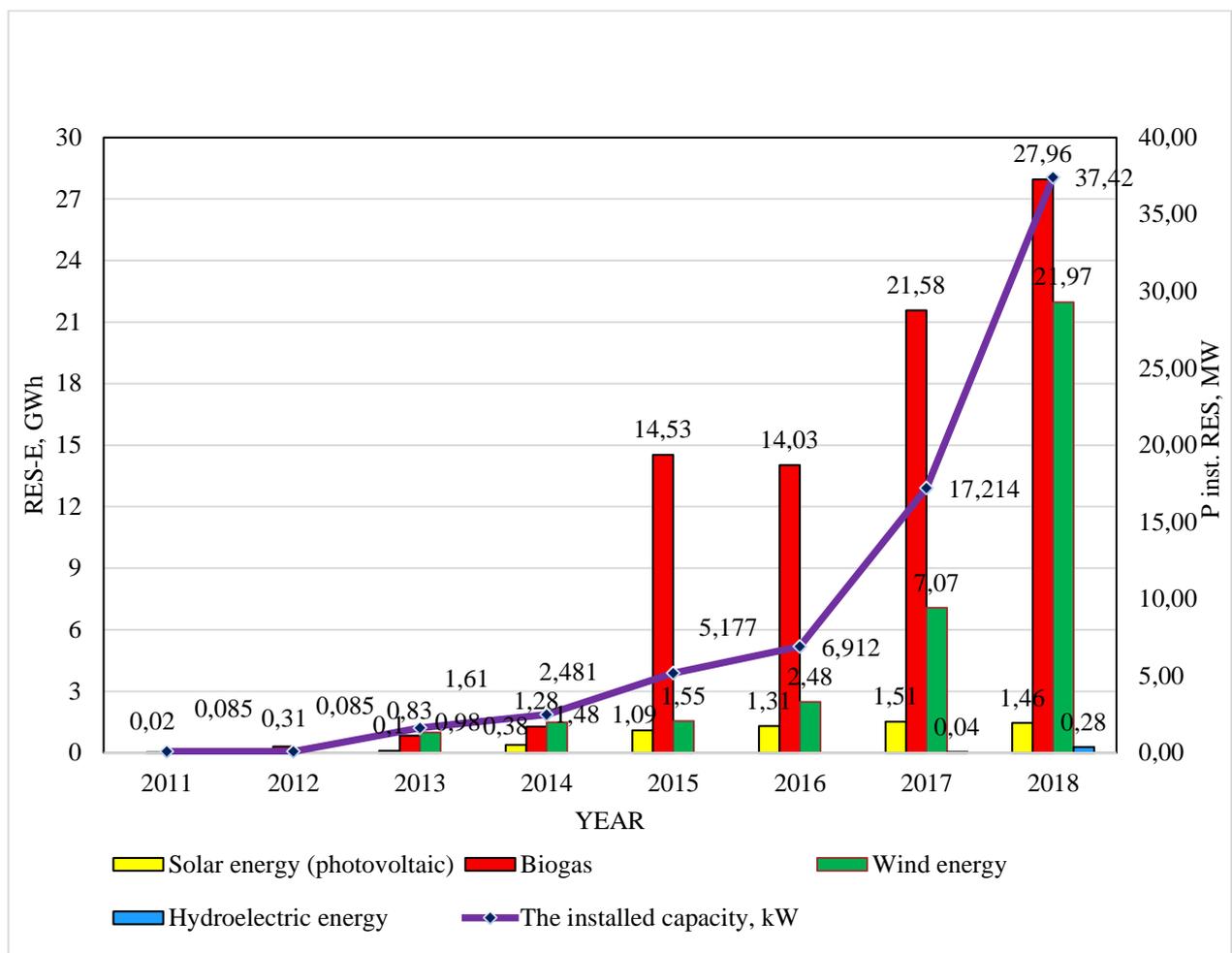


Figure 6. Evolution of the electricity production divided by types of RES and by the installed capacity

33. The nominal power generation capacity installed on the entire territory of the Republic of Moldova is about 3050 MW. But, in the current situation, approximately 2568 MW of this capacity is installed on the left side of the Dniester River. As regards the right side of the Dniester River, no more than 302 MW (63%) out of a total amount of 482 MW of installed electricity generation capacity (including sugar factories and RES-E) can be effectively used at the moment. On the other hand, due to the contractual arrangements, no more than 840 MW (33%) out of the capacities installed by MGRES from Transnistria are actually available.

1.4.2. Transmission of electricity

34. The operator of electricity transmission system, Moldelectrica State Enterprise, carries out the centralized management function of the electricity system of the Republic of Moldova. The electrical network of the Republic of Moldova (including Transnistria) includes 6228,6 km of transmission lines of 400 kV, 330 kV, 110 kV and also, 32146,7 km of distribution lines of 35 and 6-10 kV (Table 2 and Figure 7).

Table 2. Key elements of the electricity transmission network (including Transnistria).

Voltage level (kV)	Lines	Transformers	
	Length (km)	Number	The installed capacity (MVA)
Within the transmission system			
400	203,0	1 (1*)	500 (500,0*)
330	532,54 (377,34*)	5 (3*)	2515 (1525,0*)
110	5493,06 (3,336,89*)	202 (131*)	4816 (2365,7*)
Transmission - total amount	6228,6		
Within the distribution system			
35	3671,72 (787,25*)	164 (47*)	1006,58 (291,6*)
6-10	28474,98	14,698 (1*)	3,464 (5,6*)
Distribution - total amount	32146,7		

Remark: * Owned by Moldelectrica State Enterprise

35. The voltage lines of 6-35 kV operate, especially in radial mode.

36. The High-Voltage interconnections with neighbouring countries include:

- a) 1 line of 400 kV with Romania;
- b) 7 lines of 330 kV with Ukraine;
- c) 4 lines of 110 kV with Romania;
- d) 11 lines of 110 kV with Ukraine;

The High-Voltage interconnection between the Republic of Moldova and Romania is made up of the Vulcanesti-Isaccea overhead power line of 400 kV and of four lines of 110 kV. However, these interconnections are used only in exceptional cases, in island operating mode, given that the electricity system of the Republic of Moldova does not operate synchronously with the electricity system of Romania. Thus, in order to increase the security degree of the electricity supply of the Republic of Moldova by means of diversifying the sources of electricity, two major projects are currently being implemented by the Republic of Moldova: the Project concerning the synchronous interconnection of the electricity systems of the Republic of Moldova and Ukraine with the ENTSO-E electricity system and the Project concerning the asynchronous interconnection of the electricity

system of the Republic of Moldova with the electricity system of Romania by means of construction of the Vulcanesti Back-to-Back station and the Vulcanesti-Chisinau 400 kV OPL.

37. The transmission network of the Republic of Moldova has been previously optimized and built in order to serve the needs of the interconnected system of the former Soviet Union, when it was still synchronized with that of Romania, Bulgaria and most of the Eastern Europe countries (SUDEL). Currently, following the connection of Romania and of all these countries to the ENTSO-E network, the decoupled electricity system of the Republic of Moldova shows certain limitations as regards the operational stability and the possibilities of power exchange.

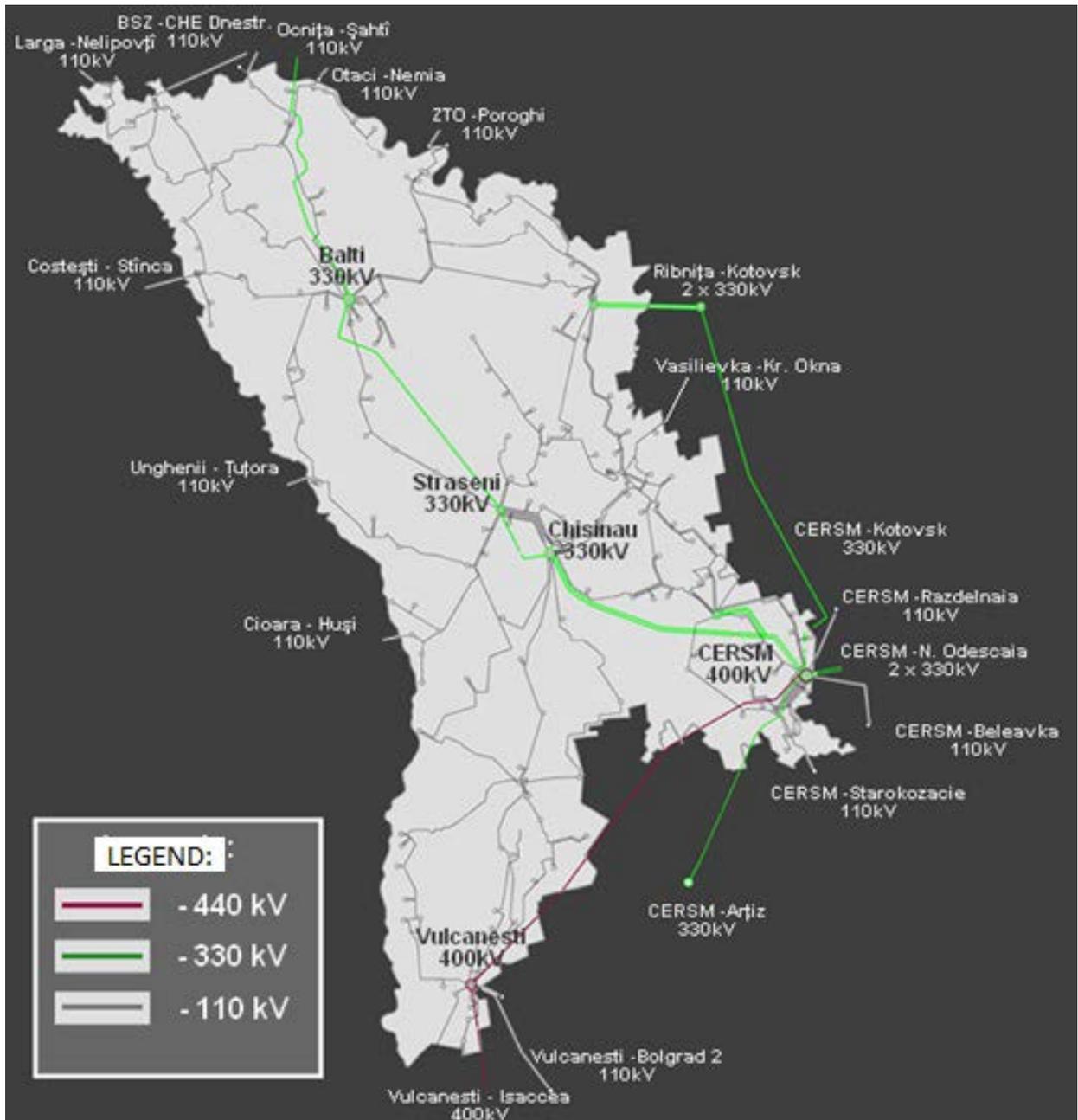


Figure 7. Scheme of high-voltage transmission network of the Republic of Moldova

1.5. Technological and operational security of the electricity system

1.5.1. Contractual arrangements

38. According to the Law on electricity, the Electricity Market Rules and the licenses issued, each electricity supplier that applies regulated tariffs shall sign bilateral contracts for the purchase of electricity at the lowest price that will allow it to cover the demand of all its final consumers, as well as shall notify the regulatory authority of all these contracts.

39. The electricity suppliers that realize electricity on the retail market, are obliged to purchase the electricity produced by CHPs and RES on the right side of the Dniester River, which, in fact, currently represents the electricity produced in the Republic of Moldova. In this respect, the Law on electricity provides for the creation of a central energy supplier, which will purchase the electricity produced by cogeneration by CHPs and RES and will resell it to all the corresponding suppliers, depending on the market share of each one. By the Government Decision No. 885/2017 Energocom JSC has been appointed as a central electricity supplier until 01 January 2021.

40. In order to cover the demand for the required electricity, the eligible suppliers and consumers shall sign negotiated bilateral contracts, usually annually. Currently, there are 5 active suppliers in the Republic of Moldova:

- a) Furnizarea Energiei Electrice Nord JSC
- b) Gas Natural Fenosa Furnizare Energie LLC FCC;
- c) Energocom JSC;
- d) Furnizare Energie LLC;
- e) LC Energie LLC.
- f) Ecoelectroenergo LLC.

FEE-Nord is the state enterprise that has been created as a result of the separation of the distribution and supply activities of RED Nord and RED Nord-Vest. *GNFFE* is the private company that has been created by Gas Natural Fenosa as a result of the separation of the distribution and supply activities of RED Union Fenosa. *Energocom JSC* is the state enterprise that imports electricity from Ukraine and purchases electricity from MGRES. All the electricity purchased by Energocom JSC is sold to FEE-Nord, GNFFE and to other suppliers and system operators that purchase electricity in order to cover losses within the networks, as well as to the eligible consumers, according to the signed contracts.

41. All the contracts concerning the purchase of electricity from suppliers abroad shall be submitted for coordination to the TSO (Moldelectrica State Enterprise) in order to be examined from the point of view of the technical feasibility of implementing such contracts.

42. Each electricity supplier signs contracts with Moldelectrica State Enterprise as regards the provision of transmission services by the transmission service operator and with the distribution network operators as regards the distribution services.

1.5.2. Purchase of electricity

43. Besides the electricity purchased from MGRES, as part of the IPS / UPS interconnected and synchronized system, from a technical point of view the electricity import from Romania is possible as well, but only in island operating mode, due to the different frequency standards of ENTSO-E.

44. In the event of a failure of the generating units at MGRES, the load is covered by the Ukrainian electricity system.

45. On the retail market, sales of electricity at unregulated tariffs managed to cover 3,24% of the total electricity consumption of final consumers in 2018.

1.5.3. System backup

46. Because of the poor capacity of power generation on the right side of the Dniester River, the very specific conditions of power generation (CHPs that operate on the basis of the demand for thermal energy and hydropower stations of low capacity) and the technologies involved, the right side of the Republic of Moldova practically does not have spare capacities for generating electricity during winter and summer, when the production of electricity within the existing CHPs is limited by the demand for thermal energy. All the specific types of reserves provided in the Technical norms of the electricity transmission network (primary, secondary, fast and slow tertiary) have therefore to be supplied from outside (Ukraine, MGRES), including frequency control services. The technical rules also establish conditions and requirements according to which the reserves are provided. In order for TSO to be able to contract the necessary system services and the balancing energy, an update of the Electricity Market Rules is required. Thus, the NAER is currently carrying out the process of updating the Electricity Market Rules, in accordance with the Law no. 107/2016.

1.5.4. Reactive power compensation

47. For a normal operation, the internal transmission network is sufficient for current consumption levels. However, some local problems, or problems related to the power supply system, may occur during maintenance, or network failures. The reactive power generated within the system (generators and power lines) is greater than the reactive load consumed and this fact imposes the need to use an appropriate voltage control equipment, which is currently missing.

One of the problems of the local system concerns the southern part. If maintenance work is carried out on the 400 kV MGRES - Vulcanesti line, it may arise the situation when it is difficult to maintain the voltage level within the established limits.

Also, due to the existing interconnection of the electricity system of the Republic of Moldova with the electricity system of Ukraine, there is a significant impact on the part of the UA system, which may sometimes lead to rather high, or rather low voltage levels in the Republic of Moldova; in such cases the dispatcher from the Republic of Moldova does not have the necessary means to control the local voltage level within the transmission system of the Republic of Moldova and it has only one option - to disconnect the high voltage lines, in order to reduce their load.

1.5.5. Congestion management;

48. The NAER has approved a new Regulation on access to the electric transmission networks for cross-border exchanges and congestion management in the electricity system, the Decision No. 424/2019 of 22 November 2019. The main elements of this document are the following:

- a) promoting competition in the generation, trading and supply of electricity;
- b) ensuring optimum use of electricity transmission infrastructure;
- c) ensuring the security of electricity supply;
- d) optimizing the allocation of interconnection capabilities;
- e) ensuring fair and non-discriminatory treatment for participants on the electricity market;
- f) ensuring and improving the transparency and reliability of information;
- g) contributing to the efficient operation and long-term development of the electricity transmission system and the electricity sector;
- h) creating the premises for the formation of a fair and orderly market and of the methodology of establishing fair and orderly prices;
- i) non-discriminatory access to the capacity of electricity transmission interconnections.

1.5.6. Losses of electricity within the network

49. The losses within the electricity distribution networks during the years 2001-2010 decreased from a level of over 29% to a level of 13%, after the distribution networks operators were forced to invest into the network and to improve the performance according to the regulations approved by NAER. Over the following few years, there has been recorded a downward trend in the share of technological consumption and energy losses. In 2018, the losses of electricity and of the technological consumption within the distribution networks remained at the same level as in 2017 (8,3%), the same evolution being peculiar also for each distribution system operator separately (RED Nord – 8,87 % (also includes the level losses of RED Nord-Vest); RED Union Fenosa – 8,13%) (Table 3).

Table 3. Losses of electricity and of the technological consumption within the distribution networks

	2001	2005	2010	2015	2016	2017	2018
RED Nord	28,4	14,39	10,43	9,19	8,82	8,74	8,87
RED Nord-Vest	39,9	20,07	12,98	9,32	9,77	9,13	-
RED Union Fenosa	28	21,44	13,68	8,21	8,25	8,12	8,13
Total amount within the distribution system	29,21	20,16	13,06	8,46	8,5	8,3	8,3

Remark: * Including technical and commercial losses

50. It is obvious that the situation concerning the losses of electricity has greatly improved by the distribution networks operators, but from the technical point of view, further improvements are possible, which would involve substantial investments in the distribution system.

1.5.7. Quality of the electricity distribution services

51. The quality of the electricity distribution service for the period 2016-2018 has been evaluated in accordance with the provisions of the Regulation on the quality of electricity transmission and distribution services, approved by the NAER Decision No. 282/2016.

The analysis of the quality of the electricity distribution service is carried out taking into consideration three basic aspects, such as:

- continuity of electricity supply to the final consumers;
- solving the problems related to the quality of the delivered electricity;
- the quality of the relations between the distribution systems operators/suppliers and the final consumers of electricity.

51.1. Continuity of electricity supply to the final consumers. According to the aforementioned Regulation, the general continuity indicators (SAIDI, SAIFI and CAIDI) are used in order to analyse the continuity of the electricity supply, which reflects the general situation of the company as regards the non-scheduled (accidental) interruptions and the guaranteed indicators, which target each final consumer separately.

The continuity indicators are calculated according to the duration of the interruptions, the number of final consumers affected by the interruption and the total number of final consumers served by a distribution system operator.

The SAIDI (System Average Interruption Duration Index) indicator reflects the average interruption duration within the electricity network of the distribution system operator during the management period and is calculated for interruptions generated for various reasons. The situation of the distribution operators for the period 2016-2018 is shown in the Figure 8.

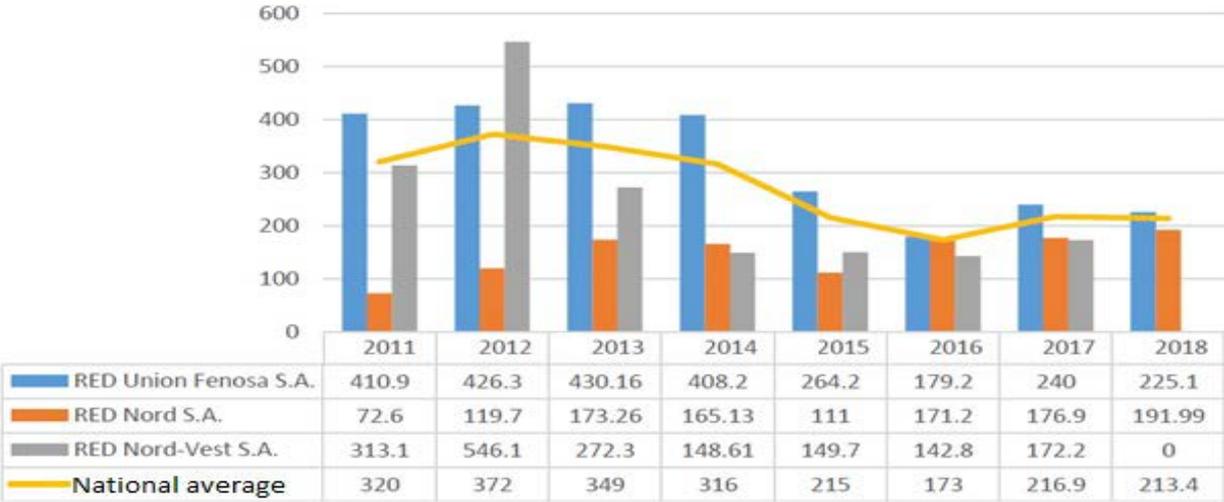


Figure 8. Evolution of the SAIDI indicator during the years 2011-2018

Analysing the dynamic situation (the period 2011-2018), it is observed that in 2018 the continuity registered by RED Union Fenosa JSC FCC has slightly improved and that registered by RED Nord JSC has decreased, the value of the SAIDI indicator increasing by 25 minutes.

In 2018 the average level of SAIDI indicator all over the country was 213,4 minutes, practically at the same level as in 2017.

Apart from the SAIDI indicator, the distribution system operators also report the values of the SAIFI indicators - system average interruption frequency. The evolution of this indicator during the years 2011-2018 is shown in the Figure 9.

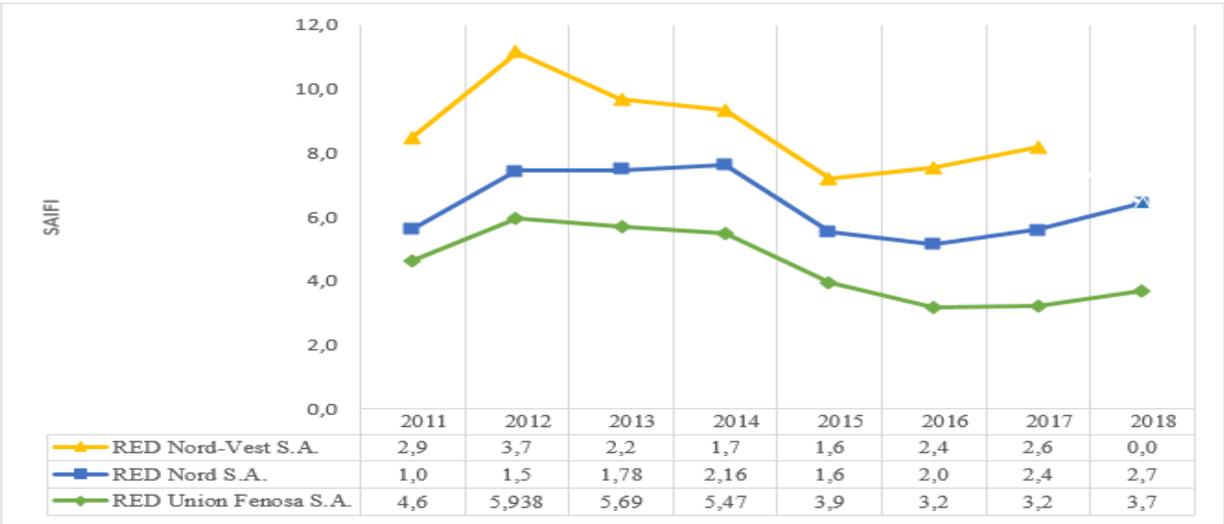


Figure 9. Evolution of the SAIFI indicator during the years 2011-2018

On the basis of the data presented in Figure 9 it can be observed that in 2018 the SAIFI indicator increased slightly for both system operators: from 3,2 to 3,7 for RED Union Fenosa JSC FCC and from 2,4 to 2,7 for RED Nord JSC.

For the year 2018, there were applied individual regulated levels of the SAIDI indicator to the operators of the distribution systems. As regards the situation of RED Nord JSC, although the frequency of interruptions is lower, these are eliminated within longer terms in comparison with to RED Union Fenosa JSC FCC, the average duration of the interruption (CAIDI) for a final consumer connected to RED Union Fenosa JSC FCC constitutes 61 minutes in comparison to 73 minutes for the consumers of RED Nord JSC.

The value of the SAIFI indicator is directly influenced by the condition of the electrical networks - the more inefficient the distribution networks, the more interruptions will occur and the value of the SAIFI indicator will be higher. Improvement of the condition of the electrical networks involves investments in their reconstruction and capital repairs. Therefore, the value of the SAIFI indicator can be influenced by the network operators by appropriate adjustment of the investment programs.

51.2. *Indicators of guaranteed continuity.* Among the general indicators, for non-compliance with which the NAER can apply penalties to the distribution system operators in the form of tariff reductions, the Regulation also establishes guaranteed indicators (quality indicators that are established for a final consumer, or an individual system user - number of interruptions for a place of consumption, the voltage level at a specific place of consumption, etc.), which applies to each final consumer.

From the reports submitted, during 2018 the distribution system operators indicated a total number of 151048 cases in which the consumers could have asked for compensation for the non-observance of the guaranteed continuity indicators. However, only 65 applications for payment of the compensation were submitted and the total amount of the paid compensations constituted 9308 lei. The quality of electricity delivered to final consumers remains a rather serious problem. Being expressed in monetary value, during 2018, this problem has caused to the distribution system operator RED Union Fenosa JSC FCC, material damages in the amount of 931910 MDL (47113 EUR), amount paid to the final consumers for the repair of the electric receivers of the 71 final consumers, which had been damaged as a result of the electricity supply with the violation of the quality parameters established by the standard. The system operator RED Nord JSC has reported the lack of requests for compensation for material damage.

1.6. Electricity supply

1.6.1. Diversification of electricity supply

52. Electricity is supplied to consumers by the 2 electricity suppliers (up to 2015 - 3 suppliers): GNFFE (RED Union Fenosa) and FEE-Nord (RED Nord). Besides these, three more electricity suppliers operate at unregulated tariffs. All the suppliers are licensed by the NAER.

53. The purchased amounts and the sales of electricity to the final consumers, including the corresponding average prices for the last 3 years (2016-2018) are presented in the Table 4.

Table 4. Electricity amounts purchased and delivered to the final consumers* (2016-2018)

Indicators	Unit of measurement	2016	2017	2018	Changes			
					2017/2016		2018/2017	
					Amount	%	Amount	%
1. Purchased electricity - total amount	million kWh	4035,7	4066,4	4178,8	+30,7	+0,8	+112,4	+2,8
	Millions lei	4572,8	4027,3	4152,1	-545,5	-11,9	+124,8	+3,1
2. Average price of purchasing electricity	bani/kWh	113,31	99,04	99,36	-14,3	-12,6	+0,32	+0,3
3. Electricity supplied to the final consumers - total amount	million kWh	3603,4	3637,4	3737,6	+34,1	+0,95	+100,2	+2,8
	Millions lei	7036,6	7048,2	6926,8	+11,6	+0,2	-121,4	-1,7
4. Average price for electricity supply (excluding VAT)	bani/kWh	195,28	193,77	185,33	-1,5	-0,8	-8,4	-4,4

* The data in the table does not include the final consumers who have made use of the eligible consumer right.

Remark: MDL (Moldavian lei), 1 MDL = 100 Bani

54. According to the data regarding the dynamics of the energy flows within the electrical networks, during 2018, the transmission system operator, the distribution system operators and the universal service providers purchased an amount of electricity of 4178,8 million kWh, an increase of 2,8% in comparison with 2017. At the same time, the final consumers, except the final consumers who made use of the right of eligibility, were delivered an amount of 3737,6 million kWh, with 2,8% more than in 2017, due to the reduced losses within the distribution network. The structure of electricity supplies by categories of final consumers for the period 2016-2018 is presented in the Table 5.

Table 5. Structure of electricity supplies by categories of final consumers for the period 2016-2018

Categories of final consumers	2016		2017		2018		2017 / 2016			2018 / 2017		
	million kWh	%	million kWh	%	million kWh	%	million kWh	%	p. p.	million kWh	%	p. p.
Consumption of electricity (usefully delivered to the final consumers) - total amount,	3669,1	100,0	3730,0	100,0	3862,7	100,0	+60,9	+1,7	0,0	+132,7	+3,6	0,0
including: household consumers	1633,3	44,5	1635,7	43,9	1637,5	42,4	+2,4	+0,1	-0,6	+1,8	+0,1	-1,5
out of which: from urban localities	865,6	23,6	866,7	23,2	857,7	22,2	+1,1	+0,1	-0,4	-9,0	-1,0	-1,0
from rural localities	767,7	20,9	769,0	20,6	779,8	20,2	+1,3	+0,2	-0,3	+10,8	+1,4	-0,4
non-household consumers	2035,8	55,5	2094,3	56,1	2225,2	57,6	+58,5	+2,8	+0,6	+130,9	+6,3	+1,5

55. During 2018, the distribution system operators served a total number of 1389030 consumption places of the final consumers, with 10063 consumption places more in comparison with 2017. RED Union Fenosa served 65% of the total number of consumption places of the electricity final consumers and 35% of the consumption places of the final consumers were served by RED Nord.

1.7. Maximum (peak) demand for electricity

1.7.1. Load curve

56. In addition to the two existing hydroelectric stations, the production of electricity by the CHPs located on both sides of the Dniester River is based almost entirely on natural gas imported from the Russian Federation through Ukraine. Therefore, practically there is no alternative fuel, or other energy resources options in the Republic of Moldova, fact that represents a considerable risk to the security of supply.

57. The typical variation of the load during the winter season is between the minimum basic load of 360-440 MW and the maximum load of 670-770 MW and during the summer season it is in the range of minimum 240 MW and maximum 650 MW. The maximum/minimum monthly load in the working days (every third Wednesday of the month) for 2018 is shown in the Figure 10 and the monthly load curves are shown in the Figure 11. The absolute value of the maximum load of the electricity system recorded 720 MW on 15.01.2018 at 19.00. The factor between the maximum load and the minimum load is therefore more than twice (or > 100%) during both winter and summer seasons.

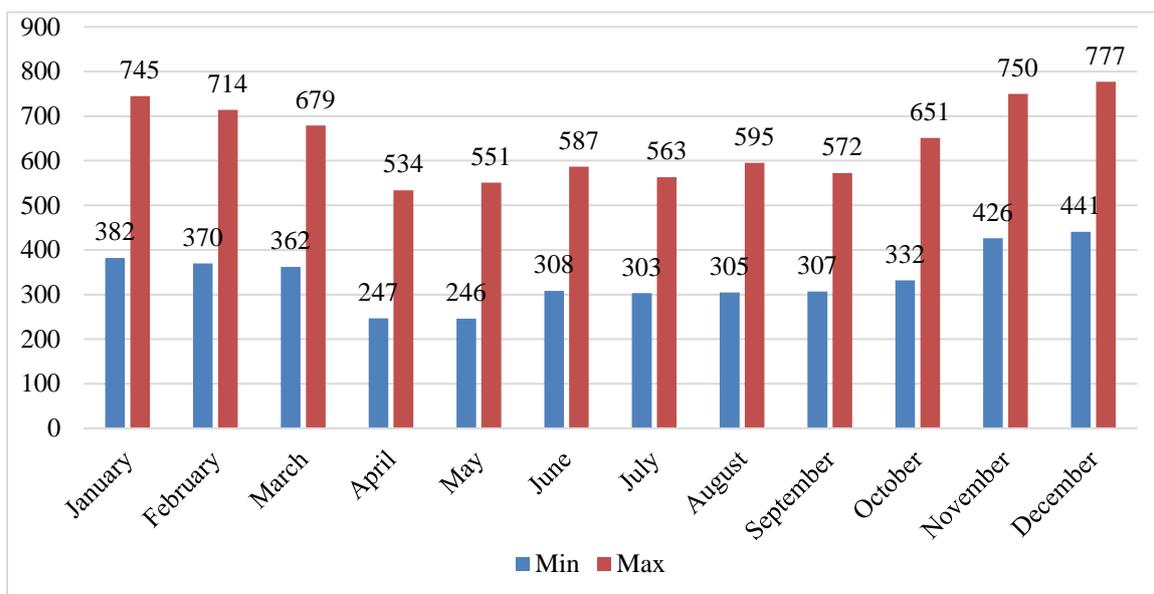


Figure 10. Load variation in the working days of 2018 (MW)

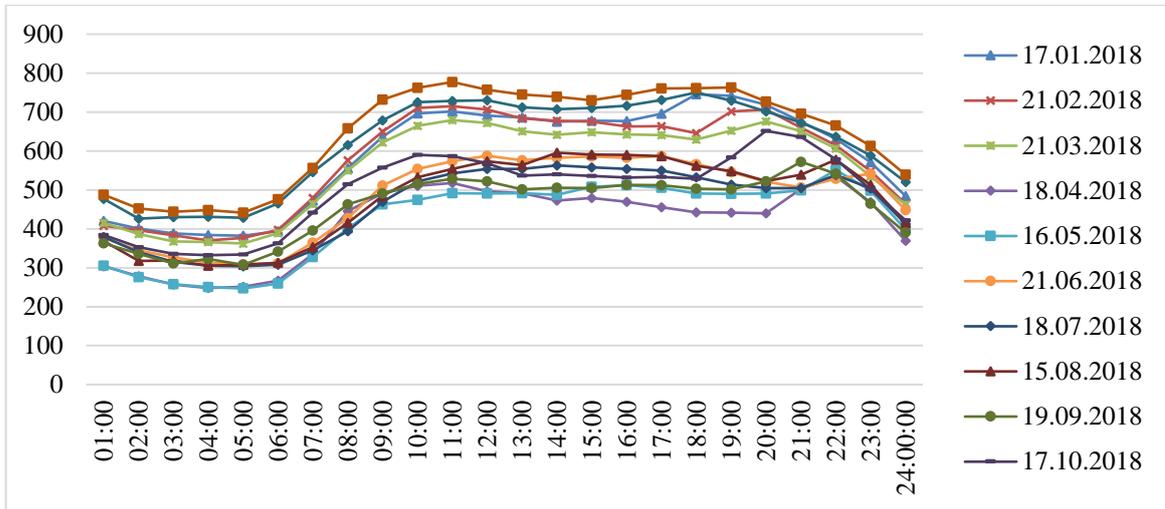


Figure 11. Load curves in the working days of 2018 (MW)

58. An example of a daily average load diagram for a month, with the highest S_{\min} value of 353 MW and an absolute peak load value of 720 MW on 15 January 2018 at 19:00 is rendered in the Figure 12, which shows a typical model of supply and demand for the Republic of Moldova.

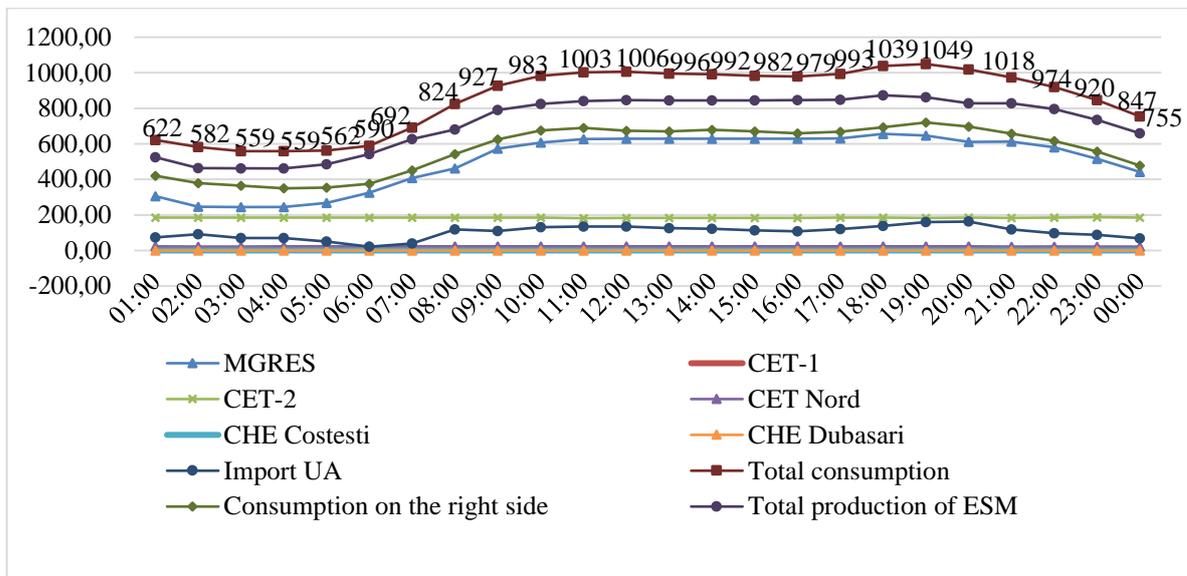


Figure 12. Chart of the maximum (peak) load and the satisfaction of demand on the corresponding day in 2018 (MW)

59. In the production of electricity, the cogenerating units (Termoelectrica and CHP-Nord) operate only at their nominal load, or at the load imposed by the demand of the thermal energy. The variable part of the maximum load curve is covered by the purchases from MGRES and imports from Ukraine, which ensure both, the load curve and ESM balancing.

1.7.2. Mode of balancing the demand for electricity and the risks involved

60. In accordance with the Rules of the electricity market, all the electricity suppliers applying the regulated tariffs, as well as the eligible consumers, shall sign energy balancing contracts with the balancing energy suppliers.

61. The Law on electricity No. 107/2016 establishes a centralized balancing mechanism, by which the electricity/balancing services shall be provided by the TSO (Moldelectrica State Enterprise) which

ensures the efficient balancing of the electricity supplies and, therefore, at lower balancing costs. The Law on electricity also provides for the future creation of an organized market of balancing electricity.

1.8. Planned investments in the new infrastructure of the energy system

1.8.1. Investment environment: General overview

62. According to the Law on electricity, the development of the transmission and distribution networks is the obligation of the system operators (TSO and DSO), based on long, medium and short term development plans and investment plans approved by the NAER, in accordance with the Regulation on planning, approving and executing investments (Decision No. 283/2016).

63. The development of new power stations can be carried out by private investors, based on the tenders organized by the Government of the Republic of Moldova.

64. According to the existing tariff methodologies, the TSO and the DSO are obliged to invest at least the financial resources they collect within the component of tariff depreciation.

65. In accordance to the legislation in force, the responsibilities of the central public administration institutions (CPA) are the following:

a) to authorize the installation of the power stations with an installed power of more than 20 MW and the increase of the capacities of the existing CHPs if the additional capacity is greater than 20 MW (the Government of the Republic of Moldova);

b) to approve the National Action Plan in the field of renewable energy (the Government of the Republic of Moldova);

c) to establish mechanisms, supporting schemes and incentives in order to meet the objectives of the state policy in the field of renewable energy (the Government of the Republic of Moldova);

d) to approve the Regulation on Holding Tenders for the Assignment of the Status of Eligible Producer of Electricity from Renewable Sources (the Government of the Republic of Moldova);

e) to approve the plans for the development of the electricity transmission and distribution networks, as well as the annual investment plans of the system operators (NAER);

f) to issue expert opinions and certificates of expertise in the field of industrial security (the bodies of expertise in the field of industrial security);

g) to issue licenses for the activities of electricity generation, transmission, distribution and supply (NAER);

h) to issue the expert opinion on state-regulated ecological tariffs and the environmental agreement (the Environment Agency and the Ministry of Agriculture, Regional Development and Environment);

i) to issue urban design certificates and building permits for works/construction of public utilities of national interest (MEI);

j) to issue approvals of network connection (TSO and DSO).

The local public authorities (LPA) are responsible for issuing urban design certificates and building permits.

1.8.2. Planned withdrawal from use of the existing electricity generation capacities and new planned projects and capacities of electricity generation

66. *Integration of RES-E electricity generation.* The integration of the RES-E electricity generators into the ESM involves several problems, which may lead to serious technical problems for the ESM

operations and may constitute a risk to the security of supply, unless they are properly addressed in advance.

The existing conditions require the presence of control instruments regarding TSO, the ability to dispatch (control of active and reactive power generated, switch on/off, voltage control in real time, manually, or automatically) and to monitor (technology for collecting electric and digital data in real time) new energy sources, both from renewable and conventional sources, in order to ensure the security of the operation of the national electricity system and the observance of the contractual agreements.

Another uncertainty is the lack of data concerning the wind potential, which would allow better planning for the development of the electricity system. The lack of planning as regards the centralized integration of RES (capacities and location) leads to uncertainties within the project approval process. The lack of a regulated mechanism for prioritizing RES projects makes it very difficult to plan the measures of strengthening the distribution/transmission network.

The stability of the ESM depends to a large extent on the stability of the Ukrainian/CIS electricity system. The large-scale integration of intermittent renewable energy production, such as wind and solar systems, combined with a scenario of high electricity import, might lead to operational problems.

The frequency control of ESM is provided by the TSO of Ukraine. This thing is acceptable when the electricity balancing needs are low, ie they do not exceed 50 MW. If this value is higher, the current practice and the associated costs for covering it might not be acceptable for the Ukrainian electricity system. In order to overcome this problem, there are only two solutions: (i) taking into account the absence of any balancing market, to pay for the required balancing energy a price that might be much higher than the regular electricity imports, in accordance with the demands of Ukraine that exercises a monopoly position, or (ii) to disconnect the whole ESM region, when the frequency cannot be maintained within the limits provided by the relevant standards.

The potential large-scale integration of the intermittent renewable energy production in the Republic of Moldova will require significant changes in the operational practices of the utilities. A potential solution can be that of improving the flexibility of conventional production by adding faster and more flexible generation units and by reducing the minimum load level on steam. Additional methods may include integration of forecasts concerning wind and solar energy production into the process of planning utilities for the next day. Also, other means of absorbing the variability of renewable energy, such as demand control and energy storage, can be used.

67. *New planned projects and capacities of electricity transmission.* Taking into consideration its geographical position between two powerful electricity systems of Romania and Ukraine, the configuration of the regional transmission network and the potential of electricity production, the Republic of Moldova has always had a strategic advantage, but which has not been fully exploited in the last decade. In the Energy Strategy of the Republic of Moldova until 2030, the Government has set its strategic priorities concerning strengthening the bidirectional transmission connections between the IPS/UPS and ENTSO-E systems, in order to strengthen the position of the Republic of Moldova as a transit country for electricity, as well as concerning the complete commercial consolidation and exploitation of national energy production capacities (MGRES and new power stations in the future).

The diversification of electricity sources in the Republic of Moldova can only be achieved in coordination with the development of the electricity transmission network. The projects of

interconnection of the Republic of Moldova with the internal electricity market of the EU by means of the new electricity lines, as well as the consolidation of the internal networks are essential, both for the security of the supply and for the social welfare in the Republic of Moldova.

The final benefit of developing and intensifying competition can only be ensured by joining a larger energy market, an objective that cannot be achieved for the Republic of Moldova without an asynchronous/synchronous interconnection of its network with the ENTSO-E system.

Moldelectrica State Enterprise continuously develops the electrical interfaces between the Republic of Moldova and Romania and the Republic of Moldova and Ukraine. In the last years, several feasibility studies have been initiated and partially completed, in order to determine the necessary measures that have to be taken in order to increase the electro energetic security of the Republic of Moldova.

Thus, for the purpose of the connection of the Republic of Moldova with the European Continental System ENTSO-E, the MEI of the Republic of Moldova applied for the European funds within the Joint Operational Program (JOP), RO-UA-MD, 2007-2013, together with the Ministry of Economy of Romania and with the Ministry of Energy and Coal of Ukraine. Within this program, the “Feasibility Study for the Synchronous Interconnection of the Energy Systems of Ukraine and the Republic of Moldova with the ENTSO-E” has been developed. This study was the first step in the process of synchronous electrical interconnection, being completed at the beginning of 2016 and evaluated by the Plenary Assembly of the Regional Group Continental Europe of ENTSO-E (ENTSO-E RG CE), considering the possible interconnection.

The Agreements concerning the future connection of the Ukrainian and Moldavian systems with the ENTSO-E system have been drawn up, which were signed by ENTSO-E, Ukrenergo and Moldelectrica system operators on 28.06.2017, after which Ukraine and Moldova shall implement the measures requested and agreed in these Agreements. The Agreement is valid for 6 years and then can be extended.

On 12.04.2018, the Memorandum of Cooperation between the MEI of the Republic of Moldova and the Ministry of Energy and Coal Industry of Ukraine on Joint Actions was signed, with the purpose of ensuring the processes of the European integration, in order to achieve the synchronous operation of the electro energetic systems of the Republic of Moldova and Ukraine with ENTSO-E.

At the beginning of 2019, the ENTSO-E consortium was created in order to carry out additional studies and the contract draft for conducting these studies. In this respect, the contracts between the Consortium and Moldelectrica State Enterprise and the Consortium and NEK Ukrenergo were signed during the third semester of 2019 and in the fourth quarter the activities related to the additional studies shall be initiated. The parties shall cover all costs related to these additional studies.

In addition, besides the feasibility study for synchronous interconnection, an analysis study has been conducted on the asynchronous interconnection of the electricity and transport systems of the Republic of Moldova and Romania by analysing three interconnection options: Isaccea-Vulcanesti-Chisinau 400 kV OPL; Straseni- Ungheni - RO 400 kV OPL, Balti- Suceava 400 kV OPL and of the related Back-to-Back stations. This scenario allows the interconnection with Ukraine to be maintained, simultaneously with the exchange of electricity with Romania.

In December 2015 Moldelectrica State Enterprise signed a service contract with the consultant - Institute for Energy Studies and Designs SA (IESD, Romania), in order to elaborate 3 feasibility studies for the asynchronous interconnection of the electricity system of the Republic of Moldova

with the electricity system of Romania, namely: Feasibility study for Vulcanesti Back to Back Station and Vulcanesti-Chisinau OPL (priority project); Feasibility study for Balti– Suceava Back-to-Back Station + 400 kV OPL; Feasibility study for Romania – Ungheni – Straseni Back-to-Back Station + 400 kV OPL.

Thus, IESD has elaborated the Feasibility Studies on the interconnection of the electricity systems of the Republic of Moldova and Romania, but with concrete activities it has advanced on the project concerning the construction of the Vulcanesti-Chisinau LEA and of the related Back to Back Station, following the completion of the Feasibility Study and of the component on environmental and social impact in March 2018.

As regards the investment project Balti-Suceava 400 kV OPL and potentially the Balti Back-to-Back Station, it has been taken the decision on updating the Feasibility Study by IESD, expected to be completed by the end of 2019 - early 2020.

Concerning the investment project concerning the construction of Romania-Ungheni-Straseni OPT and the Back-to-Back Station, the carrying out of the feasibility study is currently prematurely.

In order to make operational the electrical interconnection with Romania, on 20.12.2017, two loan agreements (of 80 million Euro) were signed between the Republic of Moldova and the European Bank for Reconstruction and Development and, respectively, the European Investment Bank, concerning financing of the project on interconnection of electricity networks between the Republic of Moldova and Romania, by means of the Isaccea-Vulcanesti-Chisinau 400 kV OPT and the related Back to Back station.

The total value of the project is estimated at 261 million Euro, a part of the financial means necessary for the implementation of the Project being covered by the loans granted by the EBRD and the EIB, another part by the World Bank by means of the International Development Agency, a loan amounting to 61 million Euro and one more by the European Union in the form of a grant amounting to 39,94 million Euro.

The financing agreements between the Republic of Moldova and the International Development Association on the Project for the Development of the Electro Energetic System amounting 13,1 million Euro and 47,9 million Euro correspondingly, as well as the Grant Agreement between the Republic of Moldova, Moldelectrica State Enterprise and the European Bank for Reconstruction and Development concerning the Project implementation were signed on 26.09.2019

At the same time, in order to consolidate and rehabilitate the electricity transmission networks, the Moldelectrica State Enterprise modernizes the transmission network with the financial assistance with a total value of 39,3 million Euro, out of which the EBRD loan amounts 14,3 million Euro, the EIB loan amounts 17 million Euro and the EU grant amounts 8 million Euro, provided by the Investment Fund “Neighborhood Investment Fund” (NIF). The level of the Project carrying out from the financial point of view, at the end of the third quarter of 2019, constitutes 52,63%, being used 8 million Euro out of the grant (100%), EIB - 7,4 million Euro (out of 17 million Euro) and EBRD - 6,79 million USD (out of 20 million USD).

II. NATURAL GAS SECTOR

68. The description of the gas system² of Moldova rendered in this document refers mainly to the territory located on the right side of the Dniester River.

2.1. Main market participants and description of their role

69. The main market participants are:

1) Moldovagaz JSC is a vertically integrated enterprise, which carries out the activity of natural gas supply (under the conditions of the public service obligation), as well as owns 100% share in the affiliated transmission and distribution companies of natural gas. Its shareholders are Gazprom PJSC (50%), the Public Property Agency of the Republic of Moldova (35,33%), the regional authorities in the Transnistrian region (13,44%) and other shareholders (1,23%);

2) transmission system operators on the right side of the Dniester River: Moldovatransgaz LLC (affiliated company of the Moldovagaz JSC) and Vestmoldtransgaz LLC which manages the Iasi-Ungheni pipeline (interconnection with the natural gas transmission system of Romania);

3) 12 regional distribution operators (all affiliated companies of Moldovagaz JSC);

4) 13 distribution system operators;

5) 15 suppliers;

6) 1 transmission operator on the left side of the Republic of Moldova (Transnistria) - Tiraspoltransgaz LLC (affiliated company of Moldovagaz JSC);

7) 5 operators of the distribution system in Transnistria (affiliated companies of Tiraspoltransgaz LLC).

70. According to the situation as of 05 December 2019, there are 17 licensed suppliers on the natural gas market, 2 transmission system operators (TSO) - Moldovatransgaz” LLC and Vestmoldtransgaz LLC and 25 license holders for natural gas distribution (the Transnistrian enterprises in the field of natural gas are not regulated by the Moldavian authorities).

71. According to the NAER Decision No. 408 of 06.04.2011 the natural gas market of the Republic of Moldova is considered to be non-competitive due to the existence of a single import source, the imports being carried out by Moldovagaz JSC.

72. By the NAER Decision No. 272 of 28.09.2018 it was imposed the obligation of public service for ensuring the last option supply of natural gas, to the supplier Moldovagaz JSC throughout the whole territory of the Republic of Moldova for a period of 3 years.

Thus, according to the provisions of the Law No. 108 of 27.05.2016 on natural gas, Moldovagaz JSC as the last option supplier, if needed, shall supply natural gas to the final consumers who have lost their supplier in certain circumstances, at the tariffs regulated and approved by the NAER.

2.2. Regulatory framework

² The term “gas” from this section refers entirely to the natural gas. Other gases that can be used in the supply chain in the natural gas sector (for example, liquefied natural gas, biogas, synthetic gas, various types of derived gases, etc.) are not yet developed in the Republic of Moldova, so they are not included in the report.

73. The Law No.108 of 27 May 2016 on natural gas, which transposes the Directive 2009/73 / EC, is the main law in the natural gas sector.

Also, there are several relevant NAER Decisions in the natural gas sector:

- 1) Natural Gas Market Rules;
- 2) Regulation on Natural Gas Supply;
- 3) Regulation on Connection to Natural Gas Networks and the Provision of Natural Gas Transmission and Distribution Services;
- 4) Regulation on the Method of Measuring Natural Gas for Commercial Purposes;
- 5) Regulation on the Development of Natural Gas Distribution Networks;
- 6) Regulation on Access to Natural Gas Transmission Networks and Congestion Management;
- 7) Code of Natural Gas Networks;
- 8) Regulation on Quality of the Natural Gas Transmission and Distribution Services;
- 9) Methodology for Calculating and Applying the Regulated Tariffs and Prices for Natural Gas, etc.

2.3. Diversification of gas supply sources and networks

74. There is insufficient diversification of the supply of primary energy resources in the Republic of Moldova. Natural gas represents about 30% of the total amount of primary energy resources on the right side, being supplied predominantly from the Russian Federation, from Gazprom PJSC. In 2018, the total amount of imported / procured natural gas constituted 1129,7 million m³. It is worth to be mentioned that, in some localities of Cantemir district, the national natural gas is used, however, the extracted and supplied amount is very small, about 0,1 million m³.

75. Moldova is an important transit country for the Russian natural gas, ensuring the transit of natural gas through the trans-Balkan pipelines on the route to Romania, Bulgaria and Turkey, including Greece and Macedonia. The total length of the three transit pipes in Moldova is 343 km, of which 247 km are managed by the company “Moldovatransgaz” and 96 km respectively by the company “Tiraspoltransgaz”, with a total capacity of 34.6 billion m³ / year.

Another interconnection of the gas system with Ukraine from the north of the country passes through Moldova to connect the two parts of the Ukrainian network. This pipeline, with a capacity of 9,1 billion. m³/year, plays an important role in the security of gas supply of Moldova, as it is connected to the natural gas storage facilities from Bogorodchany, Ukraine.

76. In practice, the capacity utilization rate of all the cross-border pipelines is only 40-50%, about 20 billion m³/year of natural gas is transited through the southern route and about 1,3-2 billion. m³/year through the northern route.

The national network is only partially used. The internal transport network covers a length of 1570 km. There are no gas storage facilities in the Republic of Moldova, and there is no access to liquefied natural gas.

77. As of 01.01.2019, all the districts of the Republic of Moldova have access to natural gas and the access level of the localities to the natural gas distribution networks (without the administrative-territorial units on the left side of the Dniester River) constituted 60.2%.

78. The gas pipeline of Iasi-Ungheni, through which the interconnection with the gas system of Romania is carried out, was put into operation in 2014, but at present it can only be used at a very low level of capacity due to several technical constraints, which limit the quantity of natural gas that can be injected from this interconnection into the Moldavian gas transmission system. In order to use the Iasi-Ungheni interconnection at its maximum capacity (1.5 billion m³ / year), it is necessary to develop the Ungheni-Chisinau gas pipeline.

79. A high level of importance in the development of the infrastructure within the gas sector of the Republic of Moldova, has the project concerning the construction of the natural gas transmission pipeline on the direction of Ungheni - Chisinau, which by the Law No. 105 of 09.06.2017 was declared of national importance.

This project envisages the construction of about 120 km of gas pipelines (Ø600 mm) with an estimated budget of approximately 93 million euro. The Moldavian authorities intend to complete this project in 2020. To this end, in 2018 the purchase and sale contract of the IS Vestmoldtransgaz State Enterprise was signed by Eurotransgaz, a company founded and owned by NNGTC Transgaz in the Republic of Moldova, thus creating the premises of a private investment for the construction of the Ungheni-Chisinau gas pipeline, a vital project for ensuring the energy security of the Republic of Moldova.

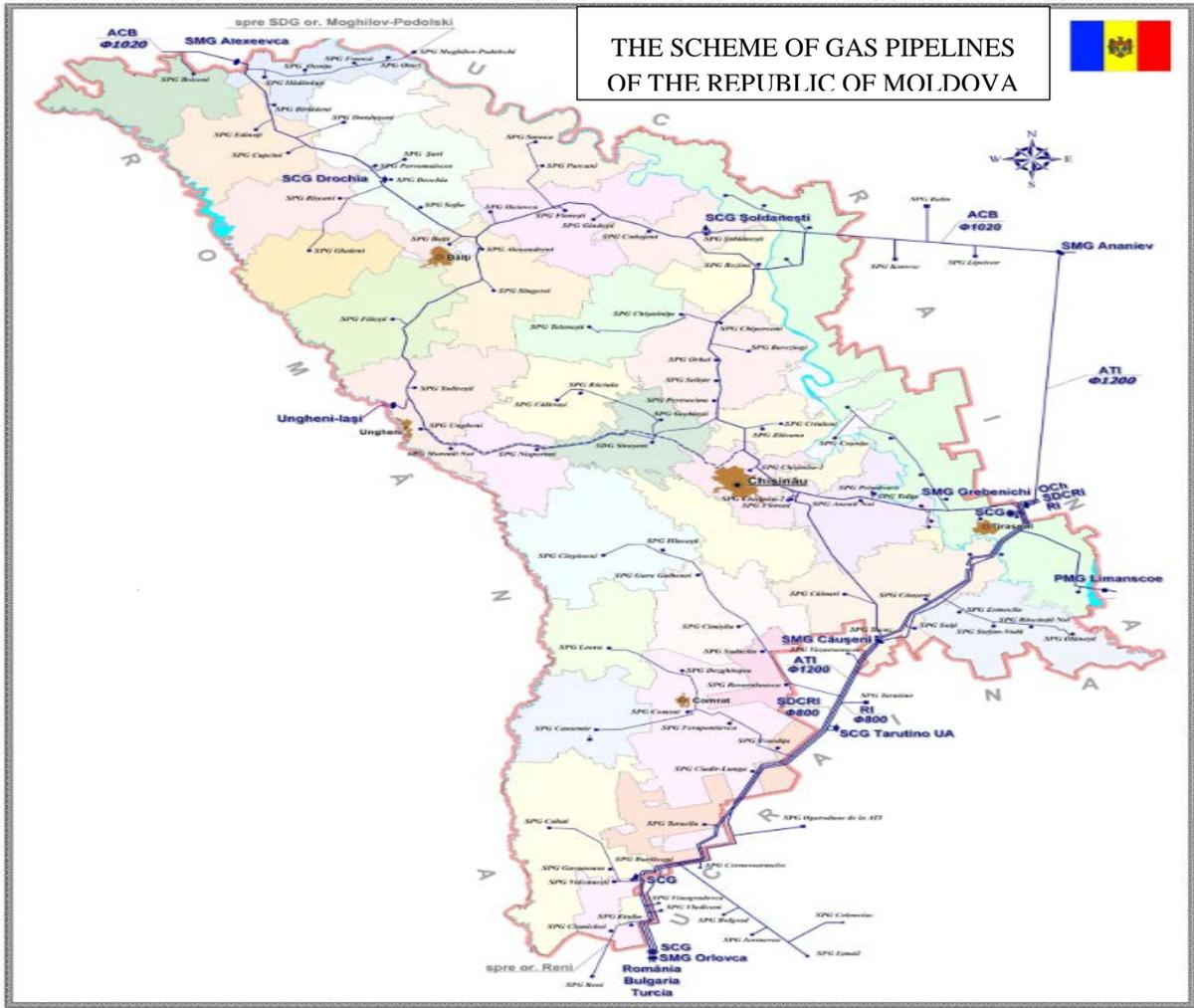


Figure 13. Infrastructure of the natural gas transmission system on the territory of the Republic of Moldova

The real connection of the natural gas transmission system of Moldova to the Romanian system will be fully possible no earlier than 2020, with a short-term objective of providing alternative gas supply in emergency situations and a long-term strategic objective of taking advantage from the existing Romanian interconnections with other European countries.

80. At the same time, it is necessary to take into consideration the fact that, in order to ensure the full operation of the Iasi-Ungheni-Chisinau gas pipeline, it is necessary to be build on the territory of Romania the Oneesti - Gheraesti - Letcani gas pipeline and 2 compression stations: Onesti and Gheraesti.

81. The Trans-Balkan highway pipeline system is a key element of the energy security of the countries of the Balkan region and Turkey and an indispensable element of the North-South corridor for the transmission of Russian natural gas, from the Russian Federation through Ukraine, the Republic of Moldova and Romania to the Balkan countries (Bulgaria, Greece, Macedonia) and Turkey. The Trans-Balkan pipeline system through the territory of Romania consists of three large diameter pipelines, through which approximately 20 billion cubic meters of natural gas are transported annually.

In the context of the tense situation between Gazprom (FR) and Naftogaz (UA), the option of ensuring the reverse gas flow on the Trans-Balkan pipeline system is more than appropriate for both the Republic of Moldova, Ukraine and other countries from the region of Southeast Europe, which would result in increased security on the gas market.

In this regard, the operators of the gas transmission system in Greece, Bulgaria, Romania, Ukraine and Moldova are in the process of examining the possibility of carrying out the Project on Ensuring the Reverse Gas Flow on the Trans Balkan Pipeline system.

82. In the context of the expiration on 01.01.2020 of the contract on the organization of the transmission of natural gas in transit mode and of the contract on natural gas supply, concluded with Gazprom PJSC, as well as taking into account the risk that the gas flow through the Trans Balkan pipelines from East to South-East Europe (on the RU-UA-MD-RO-BG-TK route) to be interrupted/stopped since 01 January 2020, if Russia (Gazprom) and Ukraine (Naftogaz) will not arrive to an agreement on the transit of the gas from the Russian Federation through Ukraine, there is a need to examine all possible scenarios of gas supply of the Republic of Moldova.

83. In order to ensure the security of the natural gas supply from 01.01.2020, Moldovagaz JSC has identified 3 scenarios that have to be examined in the case of cessation of gas transit from the Russian Federation through Ukraine to South-East Europe, namely:

a) Purchase of gas at the border between the Russian Federation and Ukraine. This scenario will allow using the existing route for the transmission of natural gas to the Republic of Moldova, but the contracting of gas transmission services through the territory of Ukraine will be carried out by Moldovagaz JSC. Thus, Gazprom PJSC will hand over natural gas to Moldovagaz JSC at the border between the Russian Federation and Ukraine.

b) Gas procurement at the border between Romania and Ukraine (GMS Isaccea/GMS Orlovca). Through the GMS Isaccea/GMS Orlovca it will be possible to deliver gas from the Russian Federation all along the trans-Balkan corridor, but in reverse flow, in the direction of Turkey - Bulgaria - Romania - Ukraine - Republic of Moldova.

c) Procurement of gas at other entry points into the gas transmission system in Ukraine, located at the border with the EU Member States. These points can be used in order to transport natural gas taken from Gazprom PJSC, or traders from EU countries.

84. For the implementation of the gas supply scenarios of the Republic of Moldova listed in the paragraph 83, a series of actions/works shall be carried out both, by the operators of the transmission systems in the Republic of Moldova, and in the neighbouring countries (signing the Interoperability Agreements for all the points of interconnection between the gas transmission system operators of the Republic of Moldova and Ukraine, signing the Contract on gas transmission on the territory of Ukraine, establishing the contractual relations with the gas transmission system operator in Transnistria, carrying out the necessary works at the Kardam (Bulgaria) - Negru Voda (Romania), and Isaccea (Romania) - Orlovca (Ukraine) interconnection points, in order to ensure the required pressure level and the measurement of natural gas in reverse flow, etc.). Moldovagaz JSC is in the process of implementing/coordinating the measures necessary to carry out the 3 scenarios mentioned in the paragraph 83.

85. At the same time, in case of stopping the transit through Ukraine, and declaring the impossibility of fulfilling the public service obligation of last option supply of the natural gas imposed to Moldovagaz JSC by the NAER Decision No. 272/2018, since 01.01.2020, the possibility of purchasing gas from the Ukrainian, or EU market is examined as a last resort scenario. In this regard, on 11.12.2019 the Government of the Republic of Moldova approved the signing of the Agreement on the support and reimbursement of the project “Emergency gas procurement instrument” between the Republic of Moldova and the EBRD. Thus, EBRD could implement an instrument for issuing a stand-by letter (letter of credit), at the request of the Republic of Moldova, in the amount of up to 50 million US dollars, for the purchase of an amount of natural gas on the Ukrainian market and/or EU markets. This agreement could enter into force after its ratification by the Parliament of the Republic of Moldova and the issue of the legal opinion by the Ministry of Justice.

2.4. Technological security, quality and maintenance level of the network

86. The regulation on the quality of the natural gas transmission and distribution service was approved by the NAER by Decision No. 416 of 09.06.2011 and has been implemented since 11 November 2011.

This Regulation provides the obligation of the system operator to ensure the delivery of natural gas to the final consumers, at the parameters of quality of natural gas, established by the national standard in force “Natural gas for Industrial and Domestic Use” GOST 5542.

According to the license holders’ reports concerning the quality indicators for 2018, which were submitted to the NAER, the distribution systems operators affiliated to Moldovagaz JSC registered 1982 (97.7%) planned interruptions, and 46 cases (2.3%) were registered by other system operators, while 3 license holders (Candelux Com LLC, PielartService LLC and Dobos Company LLC) did not operate any planned interruptions. The system operators reported that, in all the mentioned cases, they were within the permissible limits of the duration of the scheduled interruptions specified for each type of works, with their subsequent liquidation within the normative period and in full proportion, with the exception of Darnic-gaz JSC.

In the case of Darnic-gaz JSC, the data presented show the operation of 6 planned interruptions, out of which only in 4 cases the delivery of natural gas was resumed within the normative period. Thus, the performance indicator calculated for the mentioned company constituted 66,7%.

All interruptions cases were announced by the system operators at least 3 days in advance, indicating the date and the probable interruption interval, which corresponds to the requirements established in the NAER Regulation.

On 22.11.2019 by the Decision of the Board of Directors of the NAER No. 422 it was approved the Regulation on the quality of the natural gas transmission and distribution services and it was repealed the NAER Decision No. 416 of 09.06.2011.

87. The duration of the planned interruptions in the natural gas sector is presented in the Table 6.

Table 6. Duration of the planned interruptions in the natural gas sector, 2018

	Total number of planned interruptions	out of which up to			
		24 h	48 h	72 h	120 h
Total number for sectors	2028	1860	75	48	45
	100,0%	91,7%	3,7%	2,4%	2,2%
The distribution system operators affiliated to Moldovagaz JSC	1982	1816	75	44	43
	97,7%				
Other distribution system operators	46	44	0	0	2
	2,3%				

88. According to the information submitted by the license holders to the NAER, during 2018 there were 149 unplanned interruptions, out of which 145 or 97% by the distribution systems operators affiliated to Moldovagaz JSC and 4 cases, or 3% by other distribution system operators.

89. In 2018, the potential consumers submitted 14229 applications for issuing the connection approval, out of which 13651 or 96% were submitted to the distribution system operators affiliated to Moldovagaz JSC and 578 requests, or 4% to other system operators. Observing the 15 days normative period, 13517 connection approval were issued, the rest of the cases being refused. Detailed information on connection requests are presented in the Table 7.

Table 7. Requests for connection to the gas distribution networks in 2018

	Total number of requests for connection	Out of which:	
		accepted	refused
Total number within the country	14229	13517	712
	100,0%	94,2%	5,8%
Distribution system operators affiliated to Moldovagaz JSC	13651	12939	712
	96%	95,7%	100,0%
Other distribution system operators	578	578	-
	4%	4,3%	-

90. Development and investment plans of the transmission system operator and the distribution system operators to Moldovagaz JSC.

According to the provisions of the Law on natural gas, the transmission system operator and the distribution system operator shall carry out the development of natural gas transmission (distribution) networks in order to increase the demand for natural gas, so that to ensure the reliability and continuity of the consumers supply. The costs for the development of the natural gas networks are incurred by the transmission system operator/distribution system operator, and are taken into account when setting the tariffs for the natural gas transmission/distribution service, if these are carried out in

accordance with the license conditions, the Methodology for calculating tariffs and the Regulation on the planning, approval and execution of investments in the natural gas sector, issued by the NAER.

In the context of this obligation, the transmission system operator and the distribution system operator are obliged to develop and, after prior consultation with market participants, to submit to the NAER, in order to be approved, the transmission network development plan for the next ten years (for the distribution network - for three years). When developing the network development plans, the system operators shall take into account the energy strategy approved by the Government and the statistical data on the energy balance, supply and the current and planned demand. These development plans shall include effective measures to ensure the reliability of the natural gas system and the security of natural gas supply. The development plans shall inform the natural gas market participants about the main natural gas transmission/distribution networks that have to be rebuilt, or rehabilitated in the next decade, shall contain information on investments that have already been made, shall identify new investments that have to be made within three years, and shall provide a time frame for the implementation of all the investment projects.

Also, the transmission system operator and the distribution system operator are obliged to develop and implement annual investment plans approved by the NAER. In accordance with their objectives related to Moldovagaz JSC, the investments have been allocated for the development of the existing infrastructure, especially, in the technical and technological development of the delivery systems (e.g. reconstruction, modernization of existing installations and objects), as follows:

- 1) replacement of the existing gas distribution stations with the new generation of automated services, which provide all the technological processes;
- 2) modernization of the gas transmission and distribution systems as regards the monitoring processes;
- 3) installation of control valve mounting systems, telemetry and monitoring systems for cathodic protection of steel underground gas pipelines with the purpose of safe operation of the gas system;
- 4) providing with units for replacing the gas flow in the modern electronic impulse;
- 5) development of a new natural gas distribution pipeline in the localities already connected to the gas supply system, which will provide the possibility to connect new consumers to the distribution network and to increase the natural gas supplies;
- 6) continuation of the capital repair of the gas transmission pipeline Rozdilna - Ismail etc.

But, taking into consideration the financial situation of the transmission system operator, the distribution system operator and the general financial situation of Moldovagaz JSC, it is very difficult to plan major investments in the system, strictly necessary in order to ensure the continuity of gas supply to consumers.

The implementation of investments depends on several key factors, including the efficient development of the macroeconomic indices of the Republic of Moldova, as well as the adequacy and economically justified nature of the tariff policy established by the NAER, the situation of the natural gas market, the solvency of the transmission system operator, of the distribution system operator and of Moldovagaz JSC, and its ability to collect payments from its consumers.

2.5. Security of supply and operation of the sector in exceptional situations

91. The Law No.108 of 27.05.2016 on natural gas provides the basic principles and rules which regulate the obligations and behaviour of natural gas market participants in exceptional situations, the coordination of activities in the natural gas sector, as well as the actions that have to be taken in case of major interruptions in natural gas supply.

92. The assurance of security of natural gas supply is also within the competence of the Government, which for this purpose by the Government Decision No. 207 of 03.04.2019 approved the Regulation on Exceptional Situations on the Natural Gas Market and the Action Plan for Exceptional Situations on the Natural Gas Market, which is composed of two parts: Preventive Action Plan and Emergency Plan.

93. The Regulation on Exceptional Situations on the Natural Gas Market defines the roles and functions of the natural gas market participants, sets the minimum safety standards of the natural gas supply and contains, in particular, the following:

- 1) the criteria for identifying the protected consumers;
- 2) the measures that shall be taken by the natural gas company in order to ensure the gas supply of the protected consumers in the following cases:
 - a) extreme temperatures during a 7-day peak period occurring with a statistical probability of once in 20 years;
 - b) any period of at least 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years;
 - c) for a period of at least 30 days in case of the disruption of the single largest gas infrastructure under average winter conditions.
- 3) the criteria for identifying the companies in the natural gas sector that will supply natural gas to the protected consumers and the criteria for identifying different categories of major risks for the security of natural gas supply;
- 4) the measures necessary to be taken in order to prevent, or reduce the risks of interruption of the natural gas supply;

94. The Action Plan for Exceptional Situations on the Natural Gas Market contains the following:

- 1) defining crisis levels;
- 2) establishment of the role and functions of natural gas companies, of the Commission for Exceptional Situations of the Republic of Moldova, of other responsible authorities, taking into account the differences in the extent to which they are affected in case of interruption of the natural gas supply and establishment of ways and means of their interaction with the central body of the public administration, specialized in the energy field, with the Commission for Exceptional Situations of the Republic of Moldova for each defined crisis level;
- 3) identification, where appropriate, of the measures and actions necessary to reduce the potential impact of the interruption of the natural gas supply on the heating system and the supply of electricity produced by the use of natural gas;
- 4) establishment of the detailed measures and procedures that have to be followed for each crisis level, including systems for information flow assurance, in order to allow natural gas companies and natural gas industrial consumers to respond to each crisis level;
- 5) identification of the measures that are not based on the market mechanisms, that have to be implemented in the emergency situations and assessment of their level of use in order to solve the

situations that arise as a result of a crisis, identification of their consequences and determination of the procedures necessary for their implementation;

6) description of the details of the reporting obligation imposed on the companies of the natural gas sector in case of alert for each of the crisis levels;

7) establishment of a list of predefined actions that have to be taken in order to ensure the supply of natural gas in emergency situation, including trade agreements between the parties involved in such actions and the compensation mechanisms for the companies of the natural gas sector, the list of interruptible final consumers, and the order in which the natural gas supply for final consumers will be limited and/or stopped.

2.6. Import and supply of natural gas

95. The Republic of Moldova is a net importer of natural gas, which represents a major source of fuel, the rate of natural gas in the total supply of primary energy resources being about 30%.

96. In the Table 8 are presented the volumes of natural gas purchased and supplied to the final consumers on the right side of the Dniester River, distributed to final consumers, and delivered directly from the transmission networks.

Table 8. Natural gas volumes purchased and delivered to the final consumers (2005-2018)

Indicators	Unit of measurement	2001	2005	2010	2016	2017	2018	Changes			
								2017/2016		2018/2017	
								Volume	%	Volume	%
1. Purchased natural gas - total amount	million m ³	1127,0	1418,6	1187,8	1038,4	1033,9	1129,7	-4,5	-0,4	+95,8	+9,3
	million lei	1131,8	1364,9	3674,0	4036,8	3107,3	4146	-929,5	-23,0	+1038,6	+33,4
2. Average price of purchasing natural gas	\$/1000 m ³	78,0	76,1	250,1	193,5	162,05	217,5	-31,45	-16,3	+55,4	+34,2
	lei/1000 m ³	1004	962	3093	3887	3005,4	3670	-881,6	-22,7	+664,5	+22,1
3. Volume of the delivered natural gas (thorough distribution and transmission networks) - total amount	million m ³	1108,5	1315,0	1089,8	965,3	965,1	1069,5	-0,2	0,0	+104,4	+10,8
	millions lei	1004,0	1551,0	4362,2	5873,5	5762,4	5384,6	-201,1	-1,9	-377,7	-6,6
4. Average tariff for delivering natural gas (including VAT)	lei/1000 m ³	906	1180	4003	6085	5970,7	5034,8	-114,3	-1,9	-935,9	-15,7

In 2018, the natural gas supplied on the market of the Republic of Moldova was purchased from Gazprom PJSC from the Russian Federation, the total volume of natural gas purchased constituted 1129,7 million m³.

97. The total volume of natural gas, purchased in 2018, increased by 95,8 million m³ (+9,3%) in comparison with 2017. The data presented in the Table 8 shows that the consumption of natural gas in the Republic of Moldova (both distributed to final consumers and delivered directly from the natural gas transmission networks) increased by 104,4 million m³ in 2018 in comparison with the previous year,

98. The level of consumption in Moldova depends largely on the level of supply tariffs, which, in its turn, depends on two main factors: the price of the imported gas and the exchange rate of lei/US dollars, so that in the period 2005-2018 the annual price for the import increased 2,8 times (from 76,1 US dollars/1000 m³ to 217,5 US dollars/1000 m³), the average supply price increased more than 4,2 times and, as a result, the consumption of natural gas by the final consumers decreased by 19% (from 1315 million m³ to 1069,5 million m³). Analysing the total natural gas procurements for the previous periods, the continuous tendency of diminution is revealed, excepting only the years 2010, 2014, 2016 and 2018 when there were registered increases of the procured volumes of natural gas, of 5,5%, 2,1%, 3,0% and 9,3% correspondingly.

99. In the period 2016-2018, the import price, expressed in lei, increased by 2,7%, taking into consideration that in this period the exchange rate of the lei decreased by about 15,7% (from 19,92 lei / US dollar to 16,8 lei / US dollar).

100. In 2018, the purchase price of imported natural gas, expressed in dollars, increased by 25,5% in comparison with 2017, and by 11% in comparison with 2016 (from 193,5 US dollars / 1000 m³ in 2016 to 217,5 US dollars / 1000 m³ in 2018). At the same time, the exchange rate of lei decreased by 9,1% in comparison with 2017 (from 18,49 lei / US dollar to 16,8 lei / US dollar). As a result, the average annual rate of natural gas supply decreased by about 15,7% in comparison with 2017. The evolution of supply tariffs in Moldova between 1997-2018 (in lei and US dollars) is shown in the Figure 14.



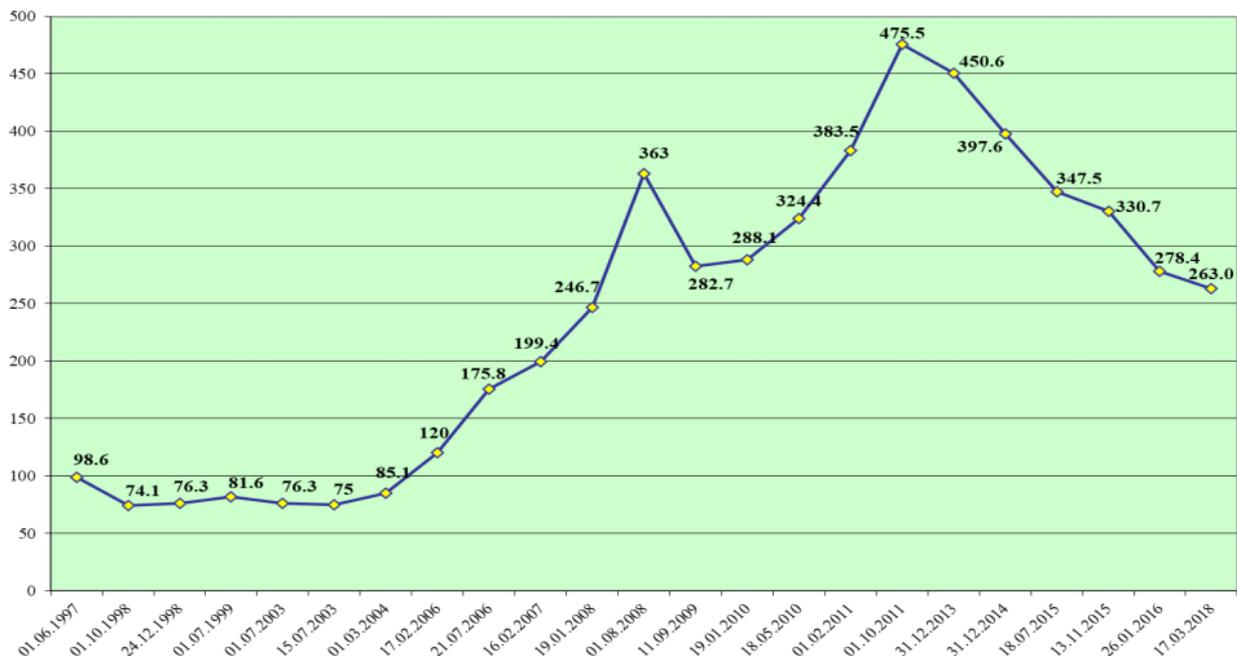


Figure 14. Evolution of gas supply tariffs during 1997-2017, lei / 1000 m³ and US dollars / 1000 m³

According to the charts shown in the Figure 14, during 1997 (the first tariff approval by the NAER) until 2018, the average supply tariffs in lei increased more than 9,7 times. In US dollars, the tariffs increased only 2,7 times. Such a big difference is explained by a more than 4 times depreciation of the MDL.

2.7. Natural gas consumption

101. The share of each company on the natural gas market of Moldova is different, because the number of consumers of each company is different. At the same time, the structure of consumers and their level of consumption is different. The participation rate of the distribution system operators on the natural gas market of Moldova in 2018 is shown in the Figure 15.

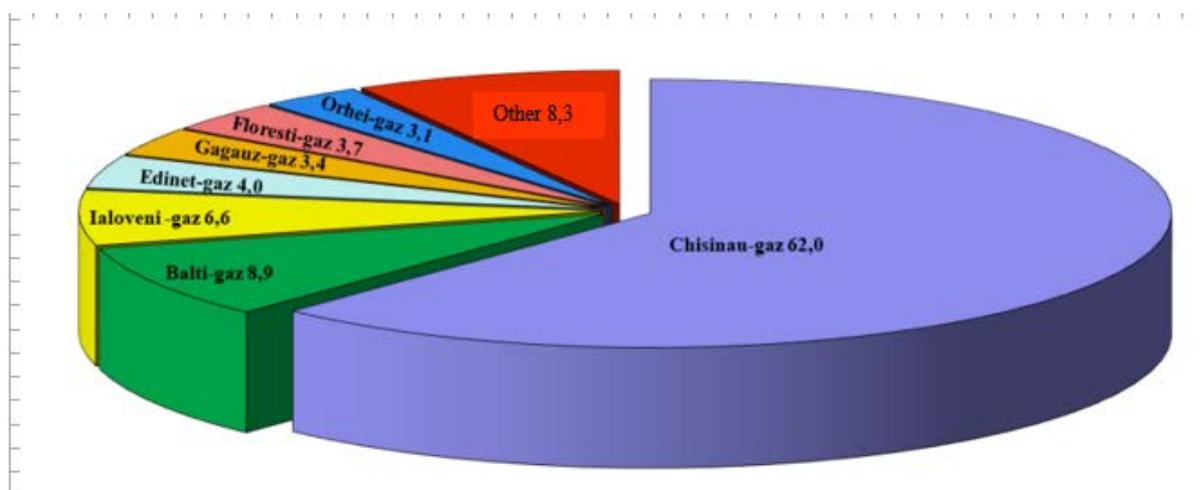


Figure 15. Participation rate of the distribution system operators on the natural gas market of Moldova in 2018, %

102. As it is shown in the Figure 15, the natural gas consumption is concentrated in the capital of the Republic of Moldova - Chisinau, which consumes 62% of the total amount of natural gas, and in the municipality of Balti, which consumes 8,9% of the total of consumption of the Republic of Moldova. The natural gas consumed in Moldova is mainly used for the production of electricity and thermal energy.

103. Moldova has a very high share of natural gas used in total primary energy consumption (30%) and is among the countries with the highest share of natural gas in electricity and thermal energy production (more than 90%).

104. In the context of the increase of the natural gas consumption in 2018 by 104,4 million m³ in comparison with 2017, it is noted the fact that there was recorded an increase by 14,4% (or 43,6 million m³) of the natural gas consumption by the domestic consumers, by 12,7% (or 5,8 million m³) by public institutions, and by 14,7% (or 34,1 million m³) by economic agents. As regards the energy sector category, the natural gas consumption increased by 5,4% (or 20,9 million m³).

Table 9. Structure of the natural gas supply in the period 2016-2018 by categories of final consumers

Categories of final consumers	2016		2017		2018		2017/2016		2018/2017	
	million m ³	%								
	965,3	100	965,1	100	1069,5	100	-0,2	0,0	104,4	10,8
Household consumers	285,3	29,5	302,8	31,4	346,4	32,4	+17,5	+6,1	43,6	14,4
Public institutions	45,1	4,7	45,4	4,7	51,2	4,8	+0,3	+0,7	5,8	12,7
Energy sector	404,3	41,9	384,0	39,8	404,9	37,9	-20,3	-5,0	20,9	5,4
Other economic agents	230,6	23,9	232,9	24,1	267,1	25	+2,3	+1,0	34,1	14,7

105. In the structure of natural gas consumption during 2018, the highest share (37,9%) belongs to consumers of the energy sector (CHPs, heat boilers), which decreased by 1,9% in comparison with 2017. The share of domestic consumers was of 32,4%, which increased by 0,8% in comparison with 2017. The share of other economic agents (except for the energy sector) was of 25%, increasing by 0,9% in comparison with 2017. It should be pointed out the fact that the share of natural gas consumption by public institutions has remained in the range of 4-5% in the last 10 years.

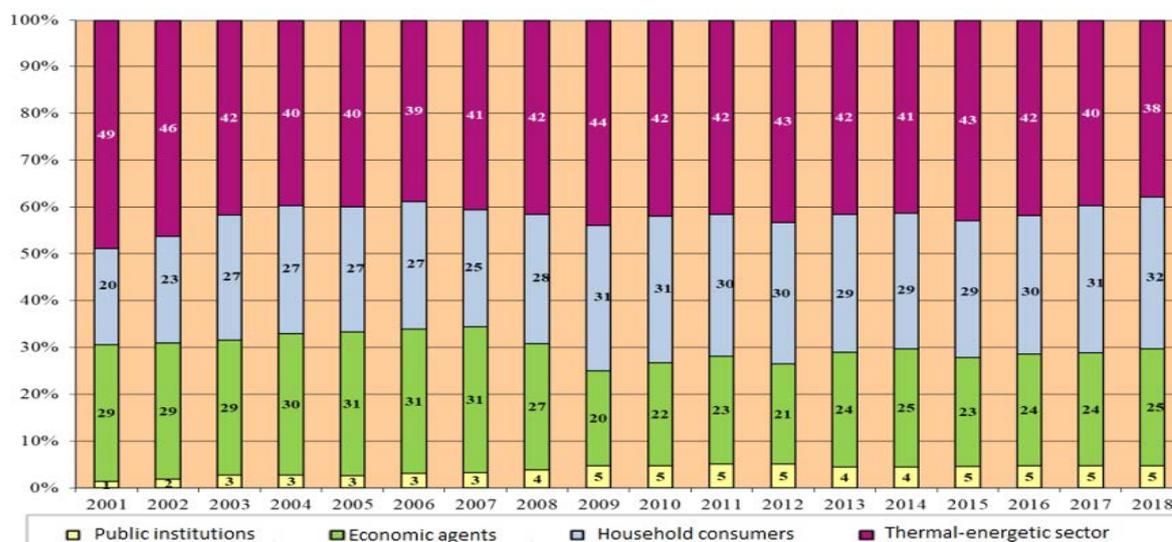


Figure 16. Structure of the natural gas consumption in the period 2001-2018, %

2.8. Implementation of the Third Energy Package in the natural gas sector

106. Moldova is a member of the Energy Community and it has committed to implement the Second and Third Energy Packages.

107. The Law No. 123 of 2009 on natural gas established the basic legislative framework for the natural gas market in accordance with the Second Energy Package and, in particular, with the Directive 2003/55 / EC.

108. The Law No. 108 of 2016 on natural gas transposes the Directive 2009/73 / EC concerning common rules for the internal market in natural gas), EU Directive 2004/67 / EC concerning measures to safeguard security of natural gas supply, and the EU Regulation no. 715/2009 on conditions for access to the natural gas transmission networks. This law provides the complete, gradual implementation of the Third Energy Package by 2020.

109. In 2013, Moldovagaz JSC began to reorganize the distribution companies and, first of all, the company Chisinau-Gaz LLC, which is one of the largest out of the 12 regional distribution operators. Moldovagaz JSC took over the supply activity and Chisinau-Gaz LLC remained only a distribution company (distribution system operator). Subsequently, starting with January 2016, the supply activity was separated from the distribution activity as regards all the other 12 companies affiliated to Moldovagaz JSC and the activity of supplying natural gas was taken over by Moldovagaz JSC. The 12 companies affiliated to Moldovagaz JSC operate only as distribution system operators.

110. The process of implementing the Third Energy Package in the natural gas sector of the Republic of Moldova shall be taken into account in the context of the current developments, as well as of the medium and short term developments, based on the contractual and property realities existing in the country.

111. As regards the separation of the transmission system operator, the new law on natural gas offers three options, established in the Directive 2009/73 / EC: 1) separation of property; 2) independent system operator; and 3) independent transmission operator.

However, the authorities of the Republic of Moldova concluded that the implementation of any of the 3 options provided by the EU Directive 2009/73 is related to specific difficulties, which could jeopardize the implementation process. Possible failures in the implementation of the separation Moldovagaz JSC could have irreversible negative effects, therefore the problem represents a risk both for the security of the country's natural gas supply and for the security of the supply of the neighbouring countries, taking into consideration the fact that the territory of the Republic of Moldova is crossed by the transit pipes, by means of which Gazprom PJSC supplies natural gas to other countries in Southeast Europe.

112. Taking into account the prospect of implementing the Third Energy Package and in order to have guarantees regarding the assets in the gas sector of the Republic of Moldova, Gazprom PJSC requested clarification of the status of its assets within Moldovagaz JSC.

113. Based on the specific situation of the Republic of Moldova, according to Decision D / 2012/04 / MC-EnC, Moldova obtained derogations consisting in delaying the implementation of Article 9 of the Directive 2009/73 / EC concerning common rules for the internal market in natural gas and repealing the Directive 2003/55/EC until 01 January 2020. This is a positive decision for the development of the gas sector in Moldova.

114. In January 2019, Moldovatransgaz LLC presented to the NAER the plan for implementing one of the separation models in accordance with the provisions of the Law No. 108 of 27 May 2016 on natural gas.

115. After 4 months of analysis, the NAER expressed its negative position regarding the provisions included in the draft plan and recommended to the transmission system operator to present another plan that would offer a single model of separation in accordance with the Law on natural gas, as well as to detail a list of actions to be implemented in order to ensure a proper separation.

116. During 2019 Moldovatransgaz LLC shall repeatedly present the implementation plan of one of the separation models, taking into account the comments of the NAER and of the Energy Community Secretariat.

117. The previous long-term contract between Moldovagaz JSC and Gazprom PJSC (signed in 2007) expired in 2011. Since then the parties have failed to renegotiate and to sign a new long-term contract, so that each year the previous agreement is extended annually. All the negotiations for a new contract were disrupted by discussions on the implementation of the Third Energy Package, including threats to a possible interruption of gas supply to Moldova.

118. In 2017, the agreements on gas transmission and supply to the contracts between Moldovagaz JSC and Gazprom PJSC were extended for a period of 3 years (2017-2019).

119. By the end of 2019, Moldovagaz JSC will negotiate with Gazprom PJSC the conclusion of a new contract, or a new agreement in order to extend the term of the contract on natural gas supply and the contract on the organization of the transmission of natural gas in transit mode to the existing contracts concluded between Moldovagaz JSC and Gazprom PJSC.