



STATEMENT ON SECURITY OF GAS SUPPLY

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LIST OF ABBREVIATIONS

CARDS	<i>COMMUNITY ASSISTANCE FOR RECONSTRUCTION, DEVELOPMENT, AND STABILISATION</i>
CEE	<i>CENTRAL AND EASTERN EUROPE</i>
CFCD	<i>CENTRAL FINANCING AND CONTRACTING DEPARTMENT</i>
TPES	<i>TOTAL PRIMARY ENERGY SUPPLY</i>
CPC	<i>COMMISSION OF PROTECTION OF COMPETITION</i>
CRES	<i>CENTRE FOR RENEWABLE ENERGY SOURCES AND SAVINGS</i>
DSO	<i>DISTRIBUTION SYSTEM OPERATOR</i>
ED	<i>ENERGY DEPARTMENT</i>
EA	<i>ENERGY AGENCY</i>
EBRD	<i>EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT</i>
EC	<i>EUROPEAN COMMISSION</i>
ECS	<i>ENERGY COMMUNITY SECRETARIAT</i>
ECT	<i>ENERGY CHARTER TREATY</i>
EE	<i>ENERGY EFFICIENCY</i>
EEAP	<i>ENERGY EFFICIENCY ACTION PLAN</i>
USAID	<i>UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT</i>
EPBD	<i>DIRECTIVE 2002/91/EC ON ENERGY PERFORMANCE OF BUILDINGS</i>
EPC	<i>ENERGY PERFORMANCE CONTRACT</i>
ERC	<i>ENERGY AND WATER SERVICES REGULATORY COMMISSION</i>
ESCO	<i>ENERGY SERVICE COMPANY</i>
ESIA	<i>ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT</i>
EU	<i>EUROPEAN UNION</i>

EUD	<i>EUROPEAN UNION DELEGATION</i>
GDP	<i>GROSS DOMESTIC PRODUCT</i>
GEF	<i>GLOBAL ENVIRONMENTAL FACILITY</i>
GHG	<i>GREENHOUSE GASES</i>
GIZ	<i>GERMAN AGENCY FOR INTERNATIONAL COOPERATION</i>
Government	<i>MACEDONIAN GOVERNMENT</i>
WtE	<i>WASTE-TO-ENERGY</i>
WTO	<i>WORLD TRADE ORGANISATION</i>
IEA	<i>INTERNATIONAL ENERGY AGENCY</i>
IPA	<i>INSTRUMENT FOR PRE-ACCESSION ASSISTANCE</i>
IRR	<i>Internal rate of return of an investment</i>
IT	<i>INFORMATION TECHNOLOGY</i>
Ktoe	<i>1000 tons of oil equivalent</i>
LSGUs	<i>LOCAL SELF-GOVERNMENT UNITS</i>
MACORA	<i>MACEDONIAN COMPULSORY OIL RESERVES AGENCY</i>
MANU	<i>MACEDONIAN ACADEMY OF SCIENCES AND ARTS</i>
MFA	<i>MINISTRY OF FOREIGN AFFAIRS</i>
MoE	<i>MINISTRY OF ECONOMY</i>
MoF	<i>MINISTRY OF FINANCE</i>
WB	<i>WORLD BANK</i>
Mtoe	<i>MILLION TONNES OF OIL EQUIVALENT</i>
NGO	<i>NON GOVERNMENTAL ORGANISATION</i>
WG	<i>WORKING GROUP</i>
NPV	<i>NET PRESENT VALUE OF THE CASH FLOW OF AN INVESTMENT</i>
OECD	<i>ORGANISATION OF ECONOMIC COOPERATION AND DEVELOPMENT</i>
PA	<i>PUBLIC ADMINISTRATION</i>

WtB	<i>WASTE-TO-BIOMETHANE</i>
PCA	<i>PARTNERSHIP AND COOPERATION AGREEMENT</i>
PCM	<i>PROJECT CYCLE MANAGEMENT</i>
PD	<i>PROJECT DIRECTOR</i>
PPP	<i>PUBLIC-PRIVATE PARTNERSHIP</i>
PSC	<i>PROJECT STEERING COMMITTEE</i>
QAS	<i>QUALITY ASSURANCE SYSTEM</i>
RE	<i>RENEWABLE ENERGY</i>
RES	<i>RENEWABLE ENERGY SOURCES</i>
RESMD	<i>REGIONAL ENERGY SECURITY AND MARKET DEVELOPMENT</i>
RES-H	<i>RENEWABLE ENERGY SOURCES – HEATING</i>
RUE	<i>RATIONAL USE OF ENERGY</i>
SAA	<i>STABILISATION AND ASSOCIATION AGREEMENT</i>
SC	<i>STEERING COMMITTEE</i>
SCM	<i>STEERING COMMITTEE MEETING</i>
SE	<i>SUSTAINABLE ENERGY</i>
SEA	<i>SECRETARIAT FOR EUROPEAN AFFAIRS</i>
TPP	<i>THERMAL POWER PLANT</i>
UN	<i>UNITED NATIONS</i>
UNDP	<i>UNITED NATIONS DEVELOPMENT PROGRAMME</i>
UNIDO	<i>UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION</i>

1. LEGAL REGULATION ON SECURITY OF SUPPLY

1.1 Energy Law

Scope of the Energy Law

In May 2018 was established the new Law on Energy and its amendment (Official Gazette No. 96/2018 and 96/2019) and it is the primary piece of legislation that regulates the domestic energy sector. The law is aligned with the prerogatives of the Third EU energy package on electricity and gas (Directives 2009/73/EC 2009/72/EC and Regulations (EC) 714/2009 and 715/2009), the Directive 2009/28/EC “on the promotion of the use of energy from renewable sources” and the Directives 2004/67/EC and 2005/89/EC.

The Energy Law governs:

- the objectives and the manner of implementing the energy policy;
- the construction of energy facilities;
- the status and competence of the Energy and Water Services Regulatory Commission;
- electricity, natural gas, heat energy markets, as well as the crude oil, oil derivatives and transport fuels market;
- the manner and procedure for determining and fulfilling the obligations for providing a public service on the electricity, natural gas and heat energy markets, as well as the rights and obligations of the energy consumers and the users of the energy systems;
- the manner and conditions for encouraging the use of renewable energy sources and
- other issues in the energy field.

Objectives of the Energy Law

The objective of this Law shall be to provide:

- secure, safe and quality energy supply to consumers in accordance with the strategic determinations in the energy field;
- efficient, competitive and financially sustainable energy sector, based on the principles of non-discrimination, objectivity and transparency, which provides a high level of security in the energy supply;
- safe, secure and efficient operation, maintenance and development of the electricity and natural gas transmission and distribution systems, as well as the heat energy distribution systems for the purpose of providing high level of services for the needs of the users of these systems;
- application of the already established internationally harmonised rules for cross-border exchange of electricity and natural gas, as well as cooperation of the electricity and natural gas transmission systems operators with the respective operators from other countries within the organised forms of cooperation of the operators;
- ownership separation of electricity and natural gas transmission and distribution system operators in order to ensure that their operation is independent of the interests of their owners in the performance of activities related to the generation, supply and/or trade in electricity and/or natural gas;
- fulfilment of the obligations for providing a public service on the energy markets, as well as effective protection of the rights and interests of the users of energy systems, energy consumer rights protection and especially the vulnerable consumers;
- encouraging the use of energy from renewable sources through appropriate and effective financial and other support measures in order to achieve the goals of the

- renewable energy policy and to ensure the security of energy supply and protection of the environment and mitigation of climate change from the negative impacts in the performance of energy activities.

In accordance with Article 11 of the Energy Law, the energy policy is geared towards securing:

- secure, safe and quality supply of all types of energy to the consumers;
- stability, competitiveness and economic functionality of the energy sector;
- efficient provision of services and protection and promotion of consumers rights;
- reduction of energy poverty and protection of vulnerable consumers;
- inclusion of the Macedonian energy markets in the regional and international energy markets;
- use of energy sources in a manner that provides sustainable energy development;
- promotion of energy efficiency;
- reduction of the use of fossil fuels for energy generation;
- promotion of the use of renewable energy sources:
- protection of public health, the environment and mitigation of climate change from the harmful effects arising from the performance of energy activities and
- fulfilment of commitments under ratified international agreements.

In order to achieve the goals of the energy policy, the competent state authorities and the operators of the Macedonian energy systems shall cooperate with scientific, educational and professional institutions and organisations, the competent authorities and bodies of other countries, as well as with the authorities and bodies on the regional and international level established by international agreements ratified by the country.

1.2 Energy and Water Services Regulatory Commission

The **Energy and Water Services Regulatory Commission** is the single legal entity that regulates issues pertaining to the performance of energy activities and which is an independent body in terms both of its operation and decision-making. The Energy Regulatory Commission (EWRC) was established by the Law for amending the Energy Law (Official Gazette 94/2002) and became operational in 2003. The EWRC is composed of five members, one of which acts as its president. The members and the president of the ERC are appointed and dismissed by the Macedonian Parliament, upon proposal of the Government, after taking in consideration the adequate and just representation of all communities.

1.3 Competences of the Energy and Water Services Regulatory Commission

According to the Energy Law, for the purpose of securing the efficient, competitive and uninterrupted operation of energy markets, the ERC has the following competences:

- to monitor the operation of energy markets, for the purpose of securing reliable energy and energy fuel supply;
- to adopt regulations and tariff systems and to adopt or approve tariff-setting methodologies for regulated energy activities;
- to adopt regulations, price setting, and tariff system methodologies on relevant energy type and/or energy fuel delivery to final customers;
- to adopt decisions on prices and tariffs, based on relevant regulations, methodologies and tariff systems;

- to adopt regulations on price-setting methodology for oil derivatives and fuels for transport and price-setting decisions for oil derivatives and fuels for transport, pursuant to the commitments assumed by the country;
- to approve the Grid Codes adopted by the energy system operators, after taking into consideration of their compliance with the Macedonian commitments that has been assumed under the international treaties or the commitments of the energy system operators stemming from their membership in international associations;
- on the proposal from the relevant energy system operators, to approve the terms and conditions and connection and access charges for relevant transmission and distribution systems;
- to adopt Electricity Supply Rules, Heating Energy Supply Rules, and Natural Gas Supply Rules;
- to adopt Rules on Electricity Supply of Last Resort and Natural Gas Supply of Last Resort;
- to adopt the Electricity Market Code and the Natural Gas Market Code;
- when needed, to request relevant system operators or electricity market operator to change terms and conditions, tariffs, rules, mechanisms and methodologies governing the connection to, access to, balancing, or use of relevant systems or market;
- to take decisions upon applications submitted for exemption from the obligation on allowing third party access to energy systems or new interconnection gas pipelines;
- to keep the Registry of Preferential Generators and adopt decisions on awarding the status of preferential generator;
- to take due care for the protection and promotion of rights of energy and energy fuel consumers and of energy system users;
- to propose measures aimed to encourage competition on energy markets;
- to stipulate the terms and conditions, manner and procedure and adopt decisions on issue, amendment, transfer, suspension, revocation and termination of separate energy activity licenses and to monitor the implementation of obligations stipulated in the energy activity licenses issued;
- to approve transmission and distribution grid development and construction plans and monitor their timely adoption and implementation;
- to approve and monitor the implementation of compliance programmes adopted by relevant energy system operators, by means of which they secure full legal, financial, management and operational independence of operation from the vertically integrated energy companies to which they belong, as well as from related energy companies;
- to resolve disputes occurred between entities performing regulated energy activities and their users, including cross-border disputes;
- to cooperate with competent state authorities, local self-government unit bodies, entities performing energy activities, energy users and other organizations and institutions;
- to submit proposals to competent authorities on taking measures pursuant to their competences and in a procedure stipulated by law, against entities performing their activities in violation to the present law;
- to raise initiatives and propose adoption of new and amendments to existing laws and other regulations in the energy field;
- to participate in relevant regional and international organizations and cooperate with other regulatory bodies, for the purpose of contributing to development of regional energy markets, pursuant to the commitments assumed under the ratified international treaties;
- to adopt the Book of Operation and other internal acts related to its operation;

- and
- to perform other matters pursuant to a law.

Monitoring functions of the Energy and Water Services Regulatory Commission

Under the Energy Law, the ERWC, for the purpose of securing efficient performance of its competences related to the operation of energy markets, is charged with the overall supervision of the energy sector by monitoring in particular:

- the implementation of legally stipulated obligations of any entities performing regulated energy activities related to securing the reliability of electricity, natural gas and heating energy supply;
- the operation of energy markets, for the purpose of securing their promotion, as well as for the purpose of securing non-discrimination, effective competition, transparency and efficient operation of markets;
- the application of rules governing interconnection allocation and congestion management in the electricity and natural gas transmission systems, based on the commitments assumed under the ratified international treaties;
- the use of income generated from congestion management in the electricity and natural gas transmission systems;
- the time needed by transmission and distribution system operators to perform connections and repairs;
- the timely announcement of relevant information held by transmission and distribution system operators related to interconnections, grid use and capacity allocation to interested parties, taking due consideration of the need for individual information to be treated as commercially confidential;
- the changes in the ownership structure of entities performing energy activities and submit proposals to competent state authorities on measures aimed to protect and promote competition on energy markets;
- the application of tariff systems and stipulated tariffs;
- the application of terms and conditions for connection of new generation facilities, taking due consideration of the costs and benefits related to different technologies on renewable energy sources, embedded generation and cogeneration of heating energy and electricity;
- the operation of license holders as regards their obligations stipulated in the licenses issued;
- the quality of services provided by license holders;
- the effective unbundling of accounting records pursuant to the present law, for the purpose of avoiding cross-subsidies
- r natural gas generation, transmission, distribution and supply activities and for the purpose of eliminating cross-subsidies between consumer groups and transfer of income and costs for the performance of regulated and/or non-regulated energy activities; and
- the implementation of compliance programmes adopted by relevant energy system operators, by means of which they should secure full legal, financial, management and operational independence from the vertically integrated companies to which they belong, as well as from related energy companies, for the purpose of securing non-discrimination, transparency and objectivity in the operation of energy markets.

1.4 Public service obligations

An obligation on public service provision is defined in the Energy Law as one or more obligations imposed to the entities performing regulated energy activities for the purpose of public interest realization pursuant to the present law, and related to safety, including the reliability of supply, service affordability for users at all times,

energy or energy fuel quality and price, services, as well as environmental protection, including energy efficiency and climate change protection.

As regards the description of a “*regulated energy activity*”, such an activity is defined as an energy activity by means of which the public service is provided and performed under terms and conditions, manner, prices and tariffs stipulated, i.e., approved by the Energy and Water Services Regulatory Commission.

In the Energy Law, the following activities are regulated activities and the entities performing these activities are subject to public service obligations:

- electricity transmission;
- electricity market organization and operation;
- electricity distribution;
- natural gas transmission;
- natural gas transmission system operation;
- natural gas distribution;
- heating energy distribution;
- electricity supply of last resort; and
- natural gas supply of last resort.

Also, electricity generation for the needs of the electricity supplier of last resort is currently deemed regulated energy activity.

The Energy Law also states that entities performing regulated energy activities shall be obliged to comply with the obligations on public service provision. The Energy and Water Services Regulatory Commission determines or approves the prices, terms, and conditions for public service provision. Any additional obligations on public service provision, imposed by the Energy and Water Services Regulatory Commission, must be clearly stipulated, easily verifiable, and non-discriminatory, while such additional obligations should be determined in the relevant licence and published on the website of the Energy Regulatory Commission.

The Energy Law further stipulates that the services provided by entities performing regulated energy activities shall secure reliable, quality and uninterrupted energy and energy fuel delivery to consumers, under equal terms and conditions, prices and tariffs, after taking into consideration the need for energy efficiency improvements and environmental protection and promotion. The licence on the performance of a regulated energy activity must indicate the volume and contents of services stipulated under the present law, the service area where public services are provided, as well as the duration of the obligation on public service provision. In addition, prices and tariffs governing the provision of public service obligations should secure recovery of justifiable costs and reasonable return of capital for the entities performing regulated energy activities as regards their relevant public service provision, including the costs on efficient use of energy resources and environment protection and promotion.

It is also stated that, when the entities performing energy activities and being subject to an obligation on public service provision are awarded financial reimbursement, other form of reimbursement and/or exclusive rights, for the purpose of implementing the obligations defined under the present law, this should be done in a transparent and non-discriminatory manner. Moreover, any reimbursements awarded must not exceed the costs incurred for the public service provision, decreased by the income generated from the service provision.

Furthermore, the Energy Law provides that the entities performing energy activities and being subject to the obligation on public service provision can be awarded state aid, pursuant to the State Aid Law. The legal entity performing one or more regulated energy activities cannot perform another energy activity or other activity, unless

otherwise stipulated under the present law. In the cases when a legal entity performs one or more regulated energy activities or one or more energy activities and another energy activity or another activity, it shall be obliged to keep separate accounting for each regulated energy activity. For non-regulated energy activities or for other activities performed, the legal entity can keep consolidated accounting records. Added to this, a legal entity performing regulated energy activity is obliged to submit the Energy and Water Services Regulatory Commission the audited annual financial reports and must publish them on its website. The relevant financial reports are required to be submitted and published for each regulated energy activity separately, whereas for non-regulated and other activities, the financial report submitted to the Energy and Water Services Regulatory Commission can be forwarded in a consolidated form.

1.5 Natural gas suppliers of last resort

The Energy Law defines the Electricity Supplier of Last Resort and Natural Gas Supplier of Last Resort. **Natural gas supplier of last resort** is a natural gas supplier that provides the public service on natural gas supply to consumers connected to the natural gas system in the cases stipulated under the law.

Under the Energy Law the natural gas supplier of last resort is obligated to secure supply to consumers connected to the natural gas transmission or distribution system, for exercising their right to natural gas supply at all times, under reasonable and clearly comparable and transparent prices set by the Energy Regulatory Commission. Added to this, the suppliers of last resort are required to provide this public service and are obliged to secure electricity or natural gas supply to households or small consumers that have not signed contracts with any of the suppliers, or if their previous suppliers have discontinued the implementation of obligations assumed under the supply contracts. Lastly, it is stipulated that, in the case of natural gas supply of last resort to consumers, such supply shall be performed under approved and controlled prices that shall not prevent competition and normal operation of natural gas markets.

1.6 Energy security

The safeguarding of the security of energy supplies is one of the key aims of the Energy Law: Article 8 expressly states that reliability of the relevant energy type or energy fuel supply shall be secured, in particular, by means of:

- achieving supply and demand balance on the relevant energy type market;
- forecasting the level of expected future demand for a particular energy type and the possibilities to address the forecasted demand with the available energy sources and facilities;
- undertaking measures to construct new energy facilities;
- quality and high level maintenance of relevant energy type transmission and distribution grids; and
- measures to address peak loads and contingency measures in the cases of failure to provide relevant energy type delivery.

The Energy Law further compels State authorities and entities performing regulated energy activities, as part of their stipulated rights, obligations and competences, to propose and undertake measures aimed to secure reliability of energy supply.

Also, the Energy Regulatory Commission is charged with the supervision of the compliance of entities performing regulated energy activities with the obligations on securing reliability of supply, and in its annual report is required to include data related to:

- reliability of the system operation;

- five-year energy balance;
- possibilities to secure reliable energy supply in the period of five to fifteen years after the year for which the report is prepared; and
- possible investments in interconnection capacities for the next five years.

1.7 Energy balance

Article 13 of the Energy Law provides that the Macedonian Government by means of the energy balance for period of one (1) year as indicative plan document determines the total needs of energy and the need of certain types of energy, as well as the possibilities for their satisfaction from domestic generation and from imports. The energy balance is adopted by the Government, on the proposal of the Ministry and upon previously obtaining the opinion of the Energy Regulatory Commission, by the end of each calendar year.

The Ministry of Economy, which is in charge of energy affairs, is responsible for monitoring the realization of the energy balance for the current year, and, if necessary, can propose adequate measures to the Government. Furthermore, as required by the Energy Law, the Minister of Economy has adopted the Rulebook on Energy Balances and Energy Statistics, which stipulates:

- the contents of energy balances;
- the contents, manner, and deadline for submission of data required for the development and monitoring of energy balances implementation;
- the contents, manner and deadline for submission of data required for the preparation of the Strategy on Energy Development and for the development and monitoring the outcomes of the Strategy's Implementation Program; and
- the bodies within the state administration and within the local self-government units, license holders on energy activities, as well as energy and energy fuel final customers that will be required to submit data required for development and monitoring of energy balances implementation, as well as the deadlines on data submission.

The entities referred to in this Rulebook are obliged - per request from the Ministry to submit data for the development and monitoring of energy balances and data required for the preparation of strategies, programs and reports on implementation programs, whose adoption has been stipulated under the Energy Law.

1.8 Acts for declaration of crisis

One of the principal priorities of the Macedonian Government in the energy sector is connected with need to ensure the national goal of security of energy supplies and to tackle any unexpected event, which might jeopardise the reliability and security of energy supplies. For this purpose, Article 14 of the Energy Law states that, on the proposal from the Ministry, by means of an act, the Macedonian Government shall stipulate in detail:

- the criteria and terms and conditions for declaring emergency,
- the manner of relevant energy type supply under such circumstances,
- measures to be taken in cases of emergency, and
- the rights and obligations of license holders on energy activity performance, pursuant to the Law on Emergency Situation Management.

Moreover, in order to protect energy systems and secure reliability of relevant energy type supply in the country, the relevant energy or energy fuel transmission and distribution system operators are obliged, pursuant to this act, to develop contingency plans and submit them to the Ministry of Economy for approval.

It is further stipulated that any measures, which are necessary to eliminate any problems occurred and protect Macedonian energy markets and energy systems in emergency situations, should:

- be of temporary nature,
- last until the end of the emergency; and
- cause the least possible distortion to the energy markets operation in the country and in the region.

It is also provided that the Macedonian Government - in compliance with the commitments it has assumed under the ratified international treaties- must duly inform the neighbouring and any other countries that are, or can be, affected by any such emergency measures as well as any competent international institutions and bodies established under any ratified international treaties.

Also, in compliance with Article 14 of the Energy Law, the Government adopted on 16 of October 2013 the Ordinance on the criteria and conditions for the declaration of a natural gas crisis, the manner of supply of natural gas in these conditions, the measures to be taken in the event of a crisis, and the rights and obligations of the licence holders for performing energy activities (Official Gazette No. 143/2013).

Pursuant to Article 236 of new Energy Law until the adoption of the regulations and the approval of the acts referred to in this Article, the regulations, rules and acts adopted, i.e. approved in accordance with the Law on Energy shall be applied ("Official Gazette " No. 16/11, 136/11, 79/13, 164/13, 41/14, 151/14, 33/15, 192/15, 215/15, 6/16, 53/16 and 189/16).

Thus this Ordinance, that implements the provisions of the Directive 2003/55/EC concerning the specific customers (households) and protecting measures during the natural gas crisis, enumerates the protected natural gas consumers as follows:

- households;
- hospitals, clinics and special health institutions (first aid emergency stations, blood transfusion centres, dialysis centres and other health institutions)
- facilities of special interest to the economy, lives of people and defence of the country,
- care centres for elderly persons,
- kindergartens, and
- zoo's.

It further sets the criteria for proclaiming crisis situation in supply of natural gas, namely:

- reduced import,
- extremely low temperatures in uninterrupted duration of five days,
- periods of extremely high consumption of gas during winter months.

Moreover, it obliges natural gas suppliers to lay down in the supply contracts they sign the minimal needed quantities of natural gas. For present purposes, minimal quantities are considered the contracted quantities between the suppliers and consumers. Moreover, the natural gas suppliers of protected consumers are obliged to inform the natural gas traders about the minimal quantities for protected consumers for the subsequent year not later than 1 October (in the current year).

The Ordinance on the criteria and conditions for the declaration of a natural gas crisis also provides for the establishment of a seven-member Commission for crisis situation in natural gas supply that must be set up by the Minister of Economy and which should regularly monitor the situation and recommends the proclamation of a crisis situation. In addition, it sets forth the procedure for the proclamation of a natural

gas crisis situation and prioritises any proposed curtailment measures with the aim to ensuring:

- the reduction of natural gas supplies to consumers, who are directly connected to the transmission system,
- the reduction of natural gas natural gas supplies to maintain technical minimum (in the industry),
- the cessation of supplies to consumers, who are directly connected to the transmission system and who have alternatives sources of energy,
- the reduction of natural gas supplies to consumers that are directly connected to the transmission system to maintain minimal production in co-generation facilities (or technical minimum),
- the cessation of supplies to consumers, who are directly connected to the distribution network and who have alternatives sources of energy,
- the reduction of natural gas supplies to consumers that are directly connected to the distribution network to their technical minimum (except for protected consumers),
- the cessation of supplies to consumers natural gas are directly connected to the distribution network (except to those that use it for co-generation),
- the reduction of all NG supplies to the minimum levels of all consumers, expect for the protected consumers, and
- the reduction of natural gas supplies to co-generation facilities.

Finally, this Ordinance specifies the rights and obligation of energy license holders in natural gas crisis situations. The most important of these obligations involves the preparation of management plans, which must be submitted by each relevant licence holder to the Ministry of Economy; the Ministry of Economy is then required to summarise these plans and to submit a consolidated crisis management plan to the Crisis Management Centre.

The Government and Ministry send accordingly information to the ECS in Vienna about every crisis in the country, according to the Energy Community Treaty.

2. STRATEGY FOR ENERGY DEVELOPMENT

According to the Energy Law the Strategy for Energy Development shall determine:

- the long-term objectives on the development of particular energy activities, for the purpose of ensuring security in the supply of different types of energy;
- the priorities for the development of the energy sector;
- the connection of the Macedonian energy systems to the energy systems of other countries;
- the inclusion of the Macedonian energy markets in the regional and international energy markets;
- the identification and use of energy resources and facilities of strategic importance for the country;
- the sources and manner for securing the required energy quantities;
- the long-term forecasting of investment needs in generation, transmission and distribution energy facilities, for the purpose of addressing energy demand;
- the manner of providing the necessary funds for realisation of the envisaged investments;
- the potential of renewable energy sources and measures to support the utilisation of renewable energy sources in order to increase the share of energy generated from renewable sources in the gross final energy consumption;
- the incentive measures to increase energy efficiency;

- the measures for reduction of the use of fossil fuels for energy generation;
- the conditions and ways for ensuring environmental protection and mitigation of climate change, as well as the protection implementation measures;
- the encouragement of competitiveness of energy markets according to the principles of objectivity, transparency and non-discrimination;
- the consumer protection;
- the fulfilment of the obligations undertaken with ratified international agreements including the obligations for adopting an integrated strategy on energy and climate change and
- any other elements of importance for the development of the energy sector.

2.1 Energy Development Strategy until 2040

By adopting to the new Energy Development Strategy until 2040 in December 2019 the Macedonian energy sector has become the first one in the Western Balkans region to consider coal phase-out by 2030.

The Strategy defines five energy pillars with six strategic goals, closely interlinked with the five dimensions of the EU Energy Union Strategy:

- security, solidarity and trust;
- a fully integrated internal energy market;
- energy efficiency;
- decarbonizing the economy;
- research, innovation and competitiveness.

The Strategy have three scenarios: reference, moderate transition and green.

The realization of each scenario envisages a different budget, 9.4 million euros for reference scenario, 13 billion euros for moderate scenario and 17.5 billion euros for green scenario.

The new Energy Development Strategy until 2040 suggests high penetration of RES and projects hydro-pumped storage plant commissioning in 2026 as energy storage for balancing. This approach gives full uncertainty for the future energy supply in the country because the Strategy put focus only on electricity sector and practically there is no interdependency with the natural gas as a backup, which is in contradictory with the previous experience and practice by many experts dealing with this issue in the world (Rinaldi).

2.2 Energy development programme

On a proposal of the Ministry, the Government shall adopt a programme for implementation of the Energy Development Strategy for a period of five years, within six months from the day of adoption of the Strategy.

The programme shall determine:

- the manner and dynamics for implementation of the Strategy;
- the implementation measures for each year of the period for which the programme relates;
- the activities of the state authorities, the bodies of the local self-government units and the entities performing regulated energy activities and the energy companies that are obligated to provide a public service;
- measures for promotion of competition and for ensuring equal status of participants in the energy markets and
- the necessary financial means for implementation of the programme, as well as the sources and the manner of providing the financial means.

3. MACEDONIAN NATURAL GAS SYSTEM

3.1 Regulatory framework in gas sector

The Law on Energy (Official Gazette No. 96/2018 and 96/2019), is the primary piece of legislation that regulates the domestic energy sector. The Energy Law is aligned with the prerogatives of the Third EU energy package on electricity and gas and Directive “on the promotion of the use of energy from renewable sources”:

- Directive 2009/72/EC concerning common rules for the internal market in electricity and Regulation 714/2009 on conditions for access to the network for cross-border exchanges in electricity

- Directive 2009/73/EC concerning common rules for the internal market in natural gas and Regulation 715/2009 on conditions for access to the natural gas transmission networks,

- Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment

- Directive 2004/67/EC concerning measures to safeguard security of natural gas supply,

- Directive 2009/28/EC on the promotion of the use of energy from renewable sources and

- Regulation 543/2013 on submission and publication of data in electricity markets.

Pursuant to the above quoted directives and regulations, the Law establishes effective legal framework for cooperation, mutual reporting and coordination of the activities of the competent authorities of the country with the relevant institutions of the Energy Community in relation to the obligations for reporting on security of supply, coordinated management in crisis situations , reporting on the imposition and monitoring of the fulfilment of the obligations for providing public and universal service and the possibility for coordinated activities regarding the functioning and the development of regional energy markets, especially in the allocation of interconnection capacity, balancing and managing third party access to energy systems.

The main reforms arising from the new Energy Law are: separation and certification of the electricity transmission system operator and natural gas transmission system operator, establishment of a concept for universal service for electricity and public service in natural gas, full liberalization of the market of electricity from the beginning of 2019, as well as increasing the competences and independence of the ERC.

3.1.1 Secondary legislation

As stipulated in the Energy Law, a number of secondary legislative acts have been enacted to further formulate and refine the legal regime governing the performance of natural gas activities. In what follows, we shall give a concise account of these acts and the issues they respectively address.

The Natural Gas Transmission Grid Code

Pursuant to the Article 123 of the Energy Law, the natural gas TSO is obliged to adopt(within 1 year after adoption of Energy Law) and, upon previous approval from the Energy Regulatory Commission, to publish in the “Official Gazette” and on its website the Natural Gas Transmission Grid Code, one year after the entry into force the Energy Law.

Because of the status quo with the gas TSO, the existing Grid Code for transmission of natural gas was prepared by AD GA-MA, the natural gas transmission system operator, which was approved by the Energy Regulatory Commission on 30th of March 2009 ("Official Gazette" No 45/2009). However, GAMA did not amend the grid code in order to be in compliance even with the Energy Law from 2011.

The natural gas transmission Grid Code specifically governs:

- the technical and other conditions for safe and safe operation of the natural gas transmission system,
- the technical and technological conditions and the manner of connection of the facilities, devices and installations of the natural gas transmission system,
- the procedure for granting consent of the users for connection to the transmission network, as well as the cooperation and obligations of the transmission system operator,
- the methodology for determining the fee for connection to the transmission network,
- the conditions and method of access of a third party to the transmission system, as well as the manner of determining the guarantees for payment of the services for transmission of natural gas,
- the manner of compliance with the users of the natural gas transmission system in cases of planned interruptions,
- the contents of the plans for development and maintenance of the transmission system, as well as the manner and procedure according to which the system users submit the necessary data for the preparation of those plans,
- the manner and procedure for forecasting the needs of natural gas, as well as the obligations of the users of the natural gas transmission system with regard to the supply of the necessary data necessary for the preparation of the forecasts for the needs of natural gas,
- measures, activities and procedures in case of disturbances and accidents,
- the functional requirements and the accuracy class of the measuring devices, as well as the manner of measuring the quantities of natural gas,
- technical criteria for the provision of system services,
- the manner and procedure for publication and allocation of the available transmission capacity and management of overloads in the natural gas transmission system,
- the manner and procedure for access to installations and measurement-regulation stations that are integral part of the transmission system and are owned by consumers or users,
- the quality of the services provided by the operator of the natural gas transmission system to the users,
- the operation of the operational management systems,
- the manner of publishing information that, in accordance with the provisions of this Law, is obliged to be published,
- the manner and procedure for providing the information for users of the system, and
- the manner of cooperation with the operators of the natural gas transmission systems to which it is connected, as well as with the operators of the distribution systems connected to the natural gas transmission system.

Natural Gas Supply Rules

Pursuant to the Article 30 of the Energy Law, the ERC issues the Natural Gas Supply Rules. These rules, determine the general terms and conditions governing the supply of natural gas, as well as the mutual rights, obligations and responsibilities of natural gas suppliers, customers, the operator of the natural gas transmission system, and the natural gas distribution system operators, and especially:

- the conditions, the manner and the term of concluding the contract for supply with the appropriate type of energy,
- the method of measurement, calculation, invoicing and recovery of the delivered energy,
- consumers to whom the delivery cannot be interrupted and the manner of providing guarantees for settling the expenses for the consumed energy,
- the manner and procedure for changing the supplier by consumers and exercising the right to a consumer without compensation, to change the supplier,
- the quality of services provided by energy suppliers,
- the minimum conditions and the manner of organizational setup and technical equipment of the energy suppliers for providing communication with the consumers in order to provide the prescribed quality of the services provided by the supplier,
- the supplier's obligations to the different categories of consumers and the specificity of each category of consumers in terms of their financial and negotiating ability,
- the manner and procedures for communication and exchange of information between the energy supplier and the operator of the appropriate system in order to ensure the prescribed quality of the energy and services provided by the operators,
- the conditions and the procedure for exclusion of consumers from the transmission or distribution systems in cases where consumers do not fulfil the obligations determined by law, other regulation and / or contract,
- the manner, the form and deadline for submission of reports, which energy suppliers and the respective operators are obliged to submit to the Energy and Water Services Regulatory Commission,
- the necessary information that suppliers are obliged to provide to consumers in their accounts in a timely manner, as well as information that should be made publicly available and of interest to all consumers,
- conditions and ways to supply vulnerable consumers and
- special measures for consumer protection.

The EWRC issued the Natural Gas Supply Rules on 1st of March 2019.

Natural Gas Market Rules

The Energy and Water Services Regulatory Commission shall adopt (within 9 months after the adoption of the Energy Law) Rules for the natural gas market, based on the principles of transparency, non-discrimination and competitiveness, which are particularly regulated:

- the organization and functioning of the natural gas market,
- the conditions to be met by the participants in the natural gas market,
- the elements of the agreements for participation in the natural gas market,
- the establishment, organization and control of natural gas trading and ancillary services, including cross-border trading,
- the procedure and the manner of collecting and submitting data to the Energy Regulatory Commission in relation to the condition state and occurrences with the natural gas market.

Natural Gas Market Rules were adopted on 18th of June 2019 by ERC.

Natural Gas Distribution Grid Codes

As required under Article 132 of the Energy Law, the adoption (within 1 year after the adoption of the Energy Law) of the Natural gas distribution Grid Codes will specify:

- the technical conditions for connection of natural gas consumers to the natural

- gas distribution system,
- the methodology for determining the fee for joining the natural gas distribution system,
- the conditions and the method of access of a third party to the system,
- the technical and other conditions for the reliable and safe operation of the distribution system and for the provision of quality services to the users of the system,
- measures, activities and procedures in case of outages and crisis situations,
- the manner and procedure for supervision and testing of the natural gas distribution network,
- the manner and procedure for regulating the flow and pressure of natural gas through the distribution network,
- the manner and procedure for harmonization of the activities in the natural gas distribution system with the activities in the natural gas transmission system,
- the functional requirements and the accuracy class of the measuring devices, as well as the manner of measuring the quantities of natural gas,
- planning for the maintenance and development of the natural gas distribution system,
- the manner of compliance with the users of the natural gas distribution system in cases of planned interruptions,
- the content of the plans for the development of the natural gas distribution system, as well as the manner and procedure according to which the system users submit the necessary data for the development of the development plans,
- the quality of the service for the delivery of natural gas,
- the forecast of the needs of natural gas, on the basis of the data obtained from the suppliers and the plans for the development of consumers,
- the manner and procedure for providing information to the users of the system, and
- the manner of cooperation with the transmission system operator and other operators of natural gas distribution systems.

The Tariff Systems

The Energy and Water Services Regulatory Commission for the purpose of exercising its competence will adopt the tariff systems for transmission and distribution natural gas, as well as for the services provided by the gas market operator and the operator for the natural gas market, shall determine the manner of establishing the tariffs for regulated services determined by applying the appropriate methodologies referred to in Article 28 of the Energy Law.

EWRC adopted the tariff systems on 24th of December 2018 and its amendments on 26th of December 2019

Certification Rulebook

The Energy and Water Services Regulatory Commission for the purpose of exercising its competence also adopts Rulebook on Certification of Transmission System Operator and Transmission System Operator of Natural Gas.

The Rulebook on Certification of Transmission System Operator and Transmission System Operator of Natural Gas was adopted on 1st of August 2018.

3.1.2 Cooperation measures

Pursuant to Energy Law paragraphs (6) and (7):

In order to achieve security in the supply of electricity and natural gas in crisis, the competent authorities and the entities performing energy activities, within their rights, obligations and competences, shall cooperate with the appropriate competent

authorities and entities performing energy activities from the other contracting parties and participants in the Energy Community Treaty and undertake measures for:

- coordination and harmonisation of national crisis measures;
- identification and, where necessary, development or upgrading of electricity and natural gas interconnections;
- assistance and cooperation in crisis or disruptions in the energy supply with international and regional security supply centres and
- determination of the conditions and methods for mutual assistance.

The Government shall notify the Energy Community Secretariat and the other contracting parties of each type of regional cooperation stipulated in paragraph (6) of this Article.

3.1.3 Measures to cover peak demand

Pursuant to Energy Law Article 78 paragraph (2) points (25):

The electricity transmission system operator shall be obliged, in accordance with this Law and the regulations and rules adopted on the basis of this Law, among other things to address peak loads in the electricity transmission system, pursuant to the Electricity Transmission Grid Code and

Pursuant to Energy Law Article 116 paragraph (2) point (20):

The natural gas transmission system operator shall be obliged, in accordance with this Law and the regulations and rules adopted on the basis of this Law, among other things to address peak loads in the natural gas transmission network, pursuant to the Natural Gas Transmission Grid Code.

3.1.4 The regulatory incentives for new investment

The Energy Law in Article 83 paragraph (3) prescribes that:

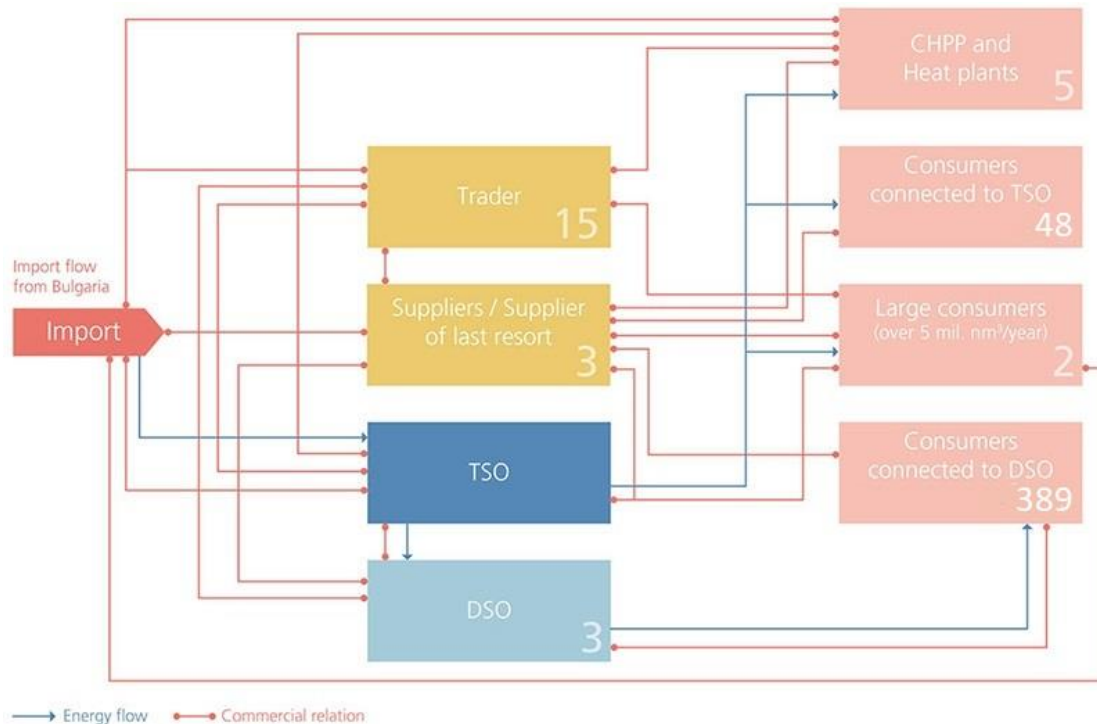
For each regulated period, the electricity transmission system operator shall prepare and submit for approval to the Energy and Water Services Regulatory Commission investment plans in the electricity transmission system, in which, as a result of the investments foreseen, the following should be shown:

- the expected increase in the efficiency of the operation of the electricity transmission system by reducing the losses of electricity and
- improvement of the quality of the delivered electricity from the electricity transmission network and in Article 117 paragraph (3):

For each regulated period, the natural gas transmission system operator shall prepare and submit for approval to the Energy and Water Services Regulatory Commission investment plans in the transmission system, in which the expected increase in the efficiency of the system operation in particular should be shown as a result of the foreseen investments.

3.2 KEY MARKET PARTICIPANTS AND THEIR RESPONSIBILITIES

As it has already been stressed, the Energy Law, has set up the prerequisites for the full opening-up of the Macedonian natural gas market by regulating all issues related to the legal and financial aspects pertaining to the performance of natural gas transmission, transmission system operation, distribution and supply activities. In the next sections, we shall present a concise account of the key participants in the domestic natural gas sector and describe in brief their respective functions and tasks.



Picture. Macedonian natural gas market scheme

The Natural Gas Transmission System Operator

The Natural Gas Transmission System Operator shall:

- maintain, upgrade and expand the natural gas transmission network, manage the natural gas transmission system, and provide connection to other systems, including the systems for the transmission of natural gas. the transfer of natural gas to other countries for the transfer of natural gas, upon prior approval by the ERC, prepares and publishes the rules for balancing the natural gas transmission system, which should be objective, transparent, non-discriminatory and market-oriented, and to reflects the needs of the system, taking into account the recycling of the property owned by the natural gas transmission system operator, - upon prior approval by ERC, adopt and publish rules for allocation of cross-border transmission capacities,

- charge fees for access to the transmission system of natural gas, which are determined on the basis of the tariffs approved for ERC, whereby the fees for each entry point or exit from the transmission system that the operator charges for users of the natural gas transmission system are determined in accordance with the mechanisms and methodologies. In addition, the law stipulates that the rules of the ENTSO-G network are regarded as accepted and applied directly by the operator of the natural gas stopping system in accordance with the obligations undertaken with the ratified international agreements, as well as the obligations of the operator ENTSO-G membership. This provision applies after the entry of the natural gas stopping system operator to ENTSO-G.

The Natural Gas Market Operator (none)

The Natural Gas Market Operator is a company that carries out activities related to the organization, efficient operation and development of the organized natural gas market and is obliged to provide confidentiality of the commercial data that the participants in the natural gas market submit. ERC in cooperation with the natural gas market operator and the natural gas transmission system operator shall adopt rules for the natural gas market that regulate the organization and functioning of the market, the conditions that market participants should fulfil, the elements of the contracts for the participation in the

market, the establishment, organization and control of natural gas trading and ancillary services, including cross-border trading, as well as the procedure and the manner of collecting and submitting data to the ERC in relation to the situation and the phenomena on the market. Until the establishment of a market operator, this function will be performed by the operator of the natural gas transmission system.

Natural Gas Distribution System Operators (DTIRZ, JP Kumanovo-Gas, JP Strumica gas)

Natural Gas Distribution System Operator is the operator of the natural gas distribution system for a certain area of the Macedonian territory, in which it distributes natural gas, maintains and, when economically viable, upgrades and expands the distribution system it manages and connects to the natural gas transmission system. The natural gas distribution system operator shall be obliged to:

- develop, upgrade and maintain the system it manages and ensure the long-term ability of the system to meet the justified requirements for the distribution of natural gas,
- ensure reliable, reliable, economically viable and safe operation of the system, to ensure safe, safe and quality delivery of natural gas in a non-discriminatory and transparent manner and in accordance with the prescribed quality,
- to integrate the consumers of the distribution network and to provide access to a third party for the use of the system,
- publish a list previously approved by ERC, with allowances for each category of consumers,
- to harmonize the operation of the natural gas distribution system with the operation of the natural gas transmission system gas,
- upon prior approval by the ERC, to adopt and publish the Grid Code for distribution of natural gas for the system it manages,
- to measure the quantities of natural gas that it undertakes and delivers to the users of the system it manages, with measuring devices, in accordance with this Law and the network rules for distribution of natural gas.

Natural Gas Suppliers (Makpetrol Prom Gas main supplier, DSOs etc.)

Natural Gas Suppliers form another important category of participants in the domestic natural gas market. The natural gas supplier purchases natural gas in the country and / or from abroad for the purpose of selling its customers, including electricity and / or heat producers, other suppliers, traders, operators of natural gas transmission or distribution systems and other participants natural gas market. The supplier who has committed to deliver natural gas provides the necessary transmission and / or distribution capacity of the respective operators. The supplier, on the basis of the performed measurements from the appropriate distribution system operator, invoices his consumers for the delivered natural gas at the agreed price, including in the invoice the fees for using the transmission system, the fee for using the natural gas market and / or the fee for using the distribution system.

Natural Gas Supplier with a Public Service Obligation

Natural Gas Supplier with a Public Service Obligation is selected on the basis of a tender procedure conducted by the Government. If a tenderer with a public service obligation is not selected in the tender procedure, the Government shall, on a proposal from the Ministry, the opinion received from the ERC makes a decision on the appointment of a natural gas supplier with a public obligation. The natural gas supplier with a public service obligation shall:

- inform consumers about their rights and conditions for delivery of natural gas within the public service,
- apply the price of natural gas established in accordance with the Tariff System of today EWRC ,
- to inform consumers about the conditions for supply and price of natural gas, and to inform them that they have the right to choose another supplier of natural gas,
- to supply them with natural gas, as a public service, households and small consumers of natural gas within the territory for which it has a license to provide a public service for the supply of natural gas,
- to procure natural gas under market conditions and to select the best offer that enables it to provide efficient provision of the public service,
- publish it on its website supply prices within the public service for the supply of natural gas.

Natural gas prices charged by a natural gas supplier that has a public service obligation should be objective and transparent, reflect costs in terms of supply and supply of natural gas, are easily comparable to those of other natural gas suppliers, discriminate against consumers of the same category.

Natural Gas Supplier of Last Resort (DSOs)

Natural Gas Supplier of Last Resort is obliged to supply consumers who have not been provided with a natural gas supplier in the event that:

- the previous supplier has stopped fulfilling its obligations for supply within the existing supply contracts,
- a bankruptcy procedure has been initiated or liquidation procedure of the previous supplier,
- the license of the previous supplier has been suspended, permanently revoked or terminated, and
- the consumers have not concluded a new natural gas supply contract after termination or and the expiration of the existing supply contract.

The natural gas supplier, of Last Resort, sells natural gas at market prices, which it publishes on its website and updates at least once a month and has the right to request an instrument for securing payments from consumers, other than households and small consumers. After the conducted tender procedure, the Government shall make a decision on the election of the supplier with the obligation to provide a natural gas supply of Last Resort.

Natural Gas Consumers

Natural Gas Consumers can, at their option, be supplied with natural gas from a supplier, in accordance with the conditions laid down by this Law and the rules for supplying natural gas, whereby consumers who meet the conditions for independent participation in the natural gas market can to acquire natural gas from natural gas traders. Consumers who fulfil the conditions for independent participation in the natural gas market can purchase natural gas from a supplier or trader registered in another country that has acceded to all valid international agreements in the field of natural gas that the country has ratified, provided that such supplier to comply with the applicable rules shall comply with the regulations and rules adopted pursuant to this Law.

The natural gas market is fully liberalized starting from 1st of January 2015.

3.3 THE EXISTING NATURAL GAS SYSTEM

3.3.1 Transmission and distribution

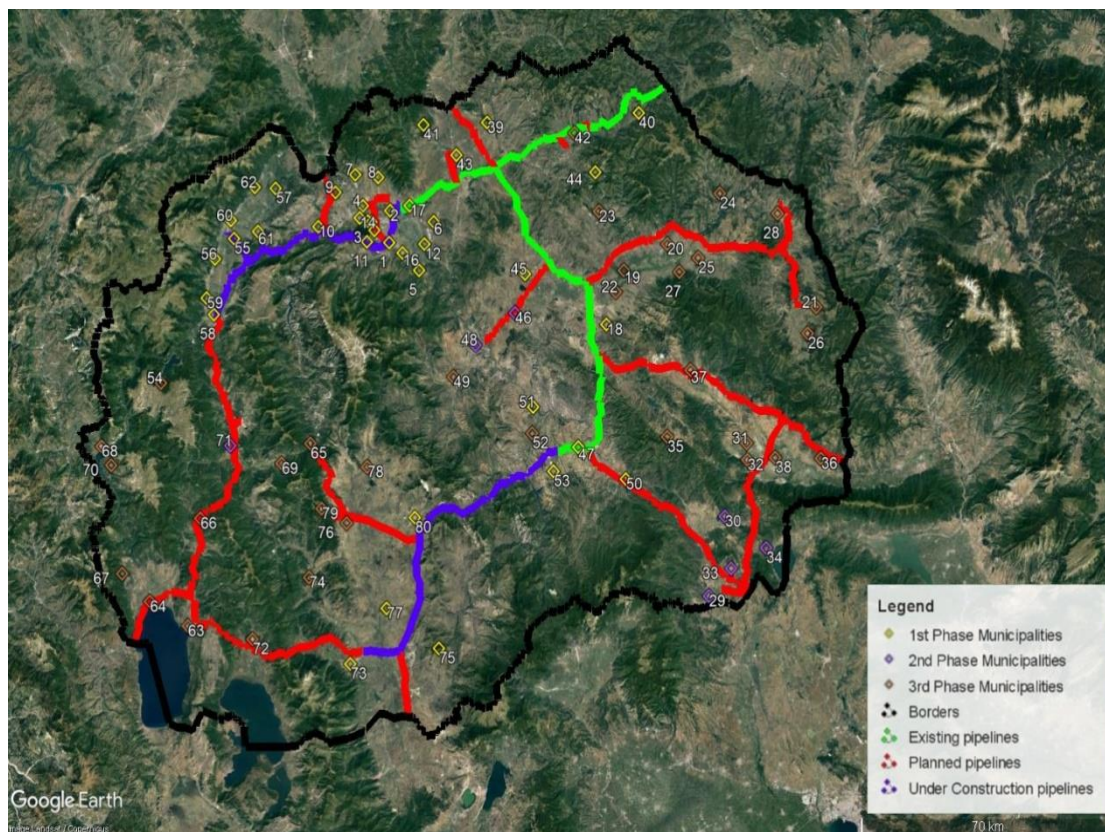
On Macedonian territory there are neither indigenous natural gas resources nor a gas storage facility and all gas is imported from Russia (via Bulgaria and Turkey) through a single transmission line that crosses the Bulgarian border at Deve Bair.

The pipeline was constructed in 1997 and runs almost 98 km to Skopje, connecting Kriva Palanka, Kratovo and Kumanovo on the way. The installed capacity is 0.8 bcm/y at 54 bar with a possibility of an upgrade to 1.2 bcm/y at a higher pressure. The present throughput capacity is 145,000 m³/h. In 2016 the pipeline reached the eastern part of Macedonian territory, too.

Currently, this pipeline is with utilisation of approximately 37%. The country intends to increase use of the pipeline to meet rising domestic demand for gas by extending its local distribution networks to urban areas, particularly along the gas transportation corridor in the Southern and Western parts of the country.

As the price of natural gas depends on the quantity of gas transported through the pipeline, increased domestic gas usage may result in a lower domestic price of natural gas per cubic metre. The extension of its local networks combined with renewed efforts to extend connectivity to international gas pipeline corridors form the basis of the National Gasification System.

The existing natural gas network is concentrated in the north and eastern part of Macedonian territory and mainly serves the Skopje area.



Picture2. The Macedonian Natural Gas System

Pipeline	Length (km)	Diameter (mm)
Bulgarian border to Skopje	98 ¹	500
Klecovce- Shtip branch	61	500
Shtip-Negotino branch	36	500
KrivaPalanka branch	1.5	100
Ginovci branch	1.7	100
Kratovo branch	4.6	100
Kumanovo branch	7.0	200
Skopje South branch	8.3	400
Skopje North branch	1.3	300
TIDZ – Bunardzik branches	5.6	200

Tabel1. The length of Macedonian Natural Gas System

The system has eight main branch points from the main line and 52 pressure reduction stations, 3 metering stations, 7 valve stations and a pig launching station.

In 2019, JSC GAMA (TSO) continued the construction of a gas ring around Skopje connecting more major customers from the public sector and industrial plants. The gas ring will also serve the planned distribution system in Skopje, which is in the process of being tendered for construction. The gas ring is operated by GAMA and operates at a pressure of 12 *bar*. At present, some 6.5 km still needs to be constructed. The original plan was that JSC GAMA would pay the connection charges for any new customers on the distribution system. This offer is no longer available, as GAMA does not have sufficient funding. New customers will have to pay for their own connection costs.

Transmission system operator, JSC GAMA, is jointly controlled by JSC Makpetrol and the state, operating only 98km of the main transmission pipeline and total 202.22 km of branch pipelines.

There are three distribution companies. City of Kumanovo is with gas network length of 15km that supplies 24 public and legal entities and cca 62 households and TIRZ (Technological Industrial Development Zones, Skopje) with 5.2km gas network length serving 9 big industrial consumers. There is also a small usage of natural gas in the Strumica region with gas network length of 33km in the south of the country where compressed gas(CNG) is supplied by road from Bulgaria. The customers are 14 public buildings, 20 commercial and 260 households. Pursuant to the Energy Law these DSOs have also the licence for natural gas supply and supply of last resort.

¹ This length don't include the recent developments in the Macedonian gas sector starting as of 2016 where 280km of main gas pipeline is under construction till 2021

3.3.2 Consumption

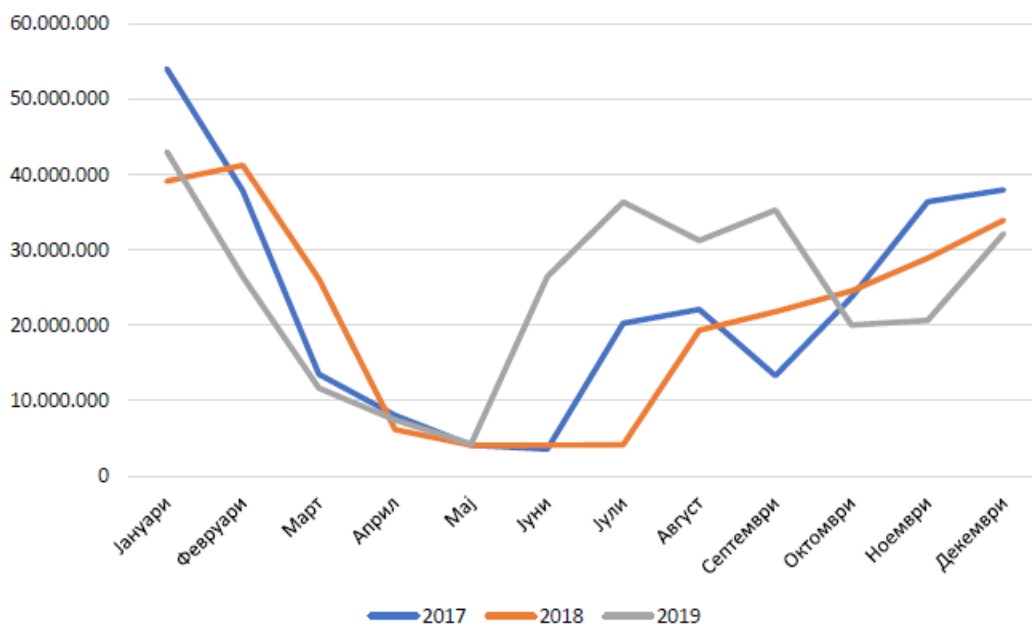


Chart1: Gas Consumption in the past three years 2017, 2018, 2019

The heavy seasonal consumption (15% in summer) is apparent with most of the gas used for heating and CHP plants in the winter (80%). The small industrial load is maintained throughout the year (16%). A winter disruption would obviously have the most economic and social impact.

The contribution of natural gas to the overall energy consumption has not increased significantly over the past decade. Gas accounts for less than 7% of the country's energy supply. According to the annual GAMA reports, in 2019 gross inland consumption was 0.295 bcm of which over 82% was consumed in heat and CHP plants. Only a minimal amount 2 % is supplied to residential customers.

Still in the period of last 10 years, the usage of natural gas in the country has increased by 300%, the transmission tariff has decreased by 50% and the price of gas has decreased by 20%. Gas participates in the final electricity generation in the country with a share of 17.6%.

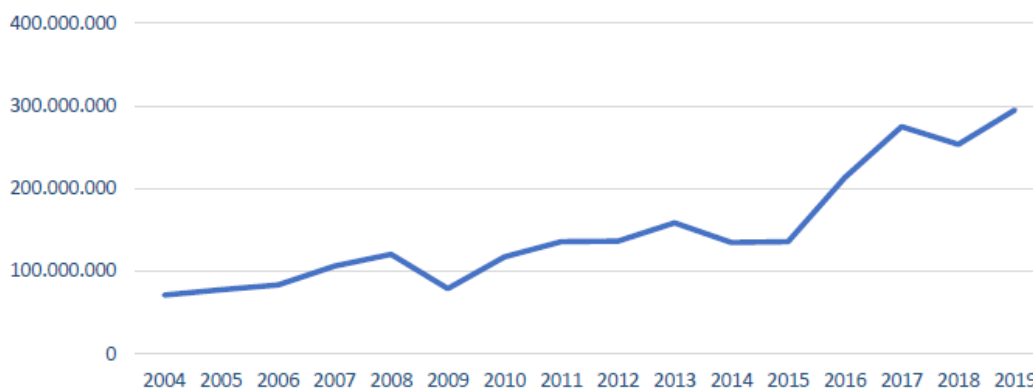


Chart2: Gas Consumption in the past 15 years

3.3.3 Market operations

The gas market operations are, for all practical purposes, controlled by JSC GAMA (a joint venture between the company JSC Makpetrol and the State) supervised by the Energy and Water Services Regulatory Commission and finally by the Government of Macedonia.

The precise division of the ownership of GAMA is still the subject of a long-standing legal dispute. At present, operations are based on an agreement that sets ownership at 50/50 between the two parties.

Due to its involvement in both transmission and supply (trade), JSC Makpetrol is an important player in the market.

According to the Implementation Report prepared by the Energy Community Secretariat, the present organisation of GAMA is in line with Second EU Energy Package on Gas, but it not fully compliant with the most recent Gas Directive (Directive 2009/73/EC). At present, the TSO is GAMA, which is a separate legal entity. However, one of the GAMA shareholders, Makpetrol, operates as the sole importer of Russian gas and owns a daughter company Makpetrol Prom Gas, which supplies customers and is subject to public service obligations. This means that a vertically integrated company is involved in both supply and transmission system operations, which contravenes the unbundling requirements of Third EU Energy Package on gas pursuant to Energy Law.

According to the law, the Ministry of Economy will be the owner and responsible for the natural gas transmission system operator (TSO). A government proceeding has been launched to review the draft text of the Out-of-court Settlement to resolve the long-running litigation between the Government and Makpetrol AD Skopje. The procedure involves the Macedonian State Attorney, with his opinion as a legal representative of the Government. After signing the extrajudicial agreement and undertaking the activities that result from it, the TSO certification procedure will start. There was mediation with the representatives of the Energy Community Secretariat for this dispute, which, according to the information by the both sides, was successful. An assessment was made of the company, which was not disputed by either party, meaning that the state had to pay Makpetrol its 50% shareholding in JSC GA-MA.

Following the suggestion of the State Attorney, a new text of the Draft Agreement on Regulation of Mutual Relations between the Macedonian Government and JSC Makpetrol was prepared, which was presented to the Energy Community Mediation Center in December 2019 and a Memorandum of Understanding was reached and it will lasts 3 months from the date of signing, with the possibility of extension. In the opinion of the State Attorney's Office and the Mediation Center, the Macedonian Assembly should adopt an act authorizing the Macedonian Government to conclude the proposed agreement with JSC Makpetrol. In view of the upcoming election period, the Government did not propose an act to Parliament.

EWRC have issued 15 licenses for natural gas trading and 8 for natural gas supply. As already mentioned, there are also 3 licensees for distribution system operations: DTIRZ, Kumanovo-Gas (both supplied by Prom Gas) and Strumica Gas (using CNG traded from Bulgaria via road) with incorporated licences for natural gas supply. Beside Makpetrol as a trader, presently JSC TE-TO, JSC ELEM Energetika, TE-TO Gas trade and JSC BEG have made supply contracts directly with foreign natural gas trading companies.

JSC MER is 2010 established state-owned company (100%), Macedonian Energy Resources (MER) for performing energy activities for the purpose of realization of project of construction and development of National gas pipeline system in Macedonia.

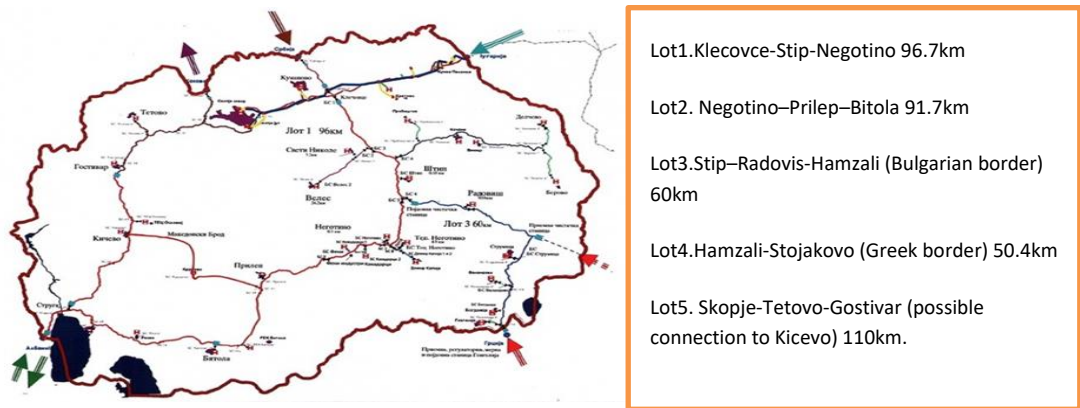
At the beginning of 2012, Macedonian Energy Resources (MER), applied for a TSO licence based on the 2011 Energy Law. This licence is based on the planned expansion of the Macedonian natural gas transmission system and has not yet been issued. ECS in that time had an opinion that the whole process of the license issuing and certification of the JSC MER should be conducted after the adoption of the Third Energy Package in Macedonian legislation. In 2019 JSC MER (Macedonian Energy Resources) was renamed in JSC NER (National Energy Resources).

Makpetrol Prom Gas supplier issues annual contracts to the customers, while JSC Makpetrol is operating a medium term contract with Gazprom revised on annual basis. The Macedonian companies pay Gazprom directly at the Bulgarian border without the intervening transit fees.

3.3.4 Planned expansion of the National gas system

There are plans to expand the gas distribution system throughout Macedonia. According to a feasibility study conducted in 2010, the total annual natural gas demand in 2030 could be 1.84 bcm compared to the present annual consumption of 0.25 bcm.

The 2010 feasibility study allows for the construction of several pipeline projects to complete the national distribution system.



Picture3: Planned expansion of the Macedonian Natural Gas System

On another plane, given that one of the major challenges facing the country revolves around the need to strengthen the use of alternative fuels, important legislative developments have taken place in order to expand the existing natural transmission and distribution networks.

In June 2016 JSC MER has finished the construction of the main gas pipeline, Lot1': „Klekovce-Block Station 5(near city of Shtip)” that was financed through funds provided by the “Agreement between the Macedonian Government and the Government of the Russian Federation for regulation of obligation of foreign SSSR upon the calculations related to the stock exchange between foreign SSSR and foreign SFRJ”.

The total length of the Lot1' „Klekovce-Block Station 5(Shtip)” is 61km.



Picture 4. Construction of Lot1'

In 2015 the Macedonian Government with a loan from Commercial Banks, Erste Bank and Deutsche Bank, started financing the project "Macedonian National Gasification system - Phase 1 - section Shtip - Negotino - Bitola (length 127km) and section Skopje - Tetovo - Gostivar "(length 76 km), as the first phase of construction of the National Gas Transmission System in Macedonia. The construction is planned to take place in the period 2016 –2020.

Lot1": In August 2016 started the construction of the Section " Block Station 6 (Shtip) to Negotino" with total length 36km (finished in 2019).



Technical parameters:

- Diameter DN500(20")
- 2 metering stations: GMRS Shtip $Q=19000\text{m}^3/\text{h}$, GMRS Negotino $Q=9000\text{m}^3/\text{h}$
- 17 valve stations: VS(DN500)8 pcs, VS(DN400)7 pcs and VS(DN80), VS(DN150)
- a pig launching station DN500(20")

Picture 5. Construction of Lot1"

Lot5: In April 2017 started the construction of the section " Skopje - Tetovo – Gostivar" with total length 76 km commissioning&start up in 2021(59.19%done by July 2020).



Technical parameters:

- Diameter DN500(20")
- 2 metering stations: GMRS Tetovo $Q=22000\text{m}^3/\text{h}$, GMRS Gostivar $Q=16000\text{m}^3/\text{h}$
- 6 valve stations: VS(DN500)4 pcs, VS(DN200) and VS(DN150)
- a pig launching station DN500(20")

Picture 6. Construction of Lot5

Lot2: In April 2017 started the construction of the section "Negotino -Prilep - Bitola" with length 92 km, commissioning & start up 2020(89.66% finished by end of 2020).



Technical parameters:

- Diameter DN500(20")
- 3 metering stations: GMRS Feni Industry $Q=15000\text{m}^3/\text{h}$, GMRS Prilep $Q=24000\text{m}^3/\text{h}$, GMRS Bitola $Q=28000\text{m}^3/\text{h}$
- 5 valve stations: VS(DN500)5 pcs, VS(DN200)2 pcs, VS(DN150) and VS(DN80)
- a pig launching station DN500(20").

Picture 7. Construction of Lot2

The second phase of construction of the Macedonian gas transmission system is expected to be constructed by the end of 2021. This phase includes construction of the "Gostivar-TPP Oslomej-Kicevo" Section (34 kilometres in length) at a cost of €14.5

million, and the "Sveti Nikole-Veles" Section (28 kilometres in length), which is in the project documentation preparation stage, the "Kicevo – Ohrid" Section (50 kilometres in length) and the "Ohrid-Bitola" Section (65 kilometres in length) which are both in the tender documentation preparation stage. These remaining sections are expected to cost approximately €30.5 million. Funding is expected to be provided by international financial institutions, the European Investment Bank, the European Bank for Reconstruction and Development and others.

Macedonian gas sector remains committed to accelerating the integration of the Central and Southeast European gas markets and diversifying gas supplies by utilising natural gas from the Caspian Sea region, which would provide great economic assistance to Central and Southeast European countries. The Government intends to finance further work on the main pipeline of the National Gasification System with a loan from international financial institutions. In October 2019, the Ministry of Finance, in cooperation with NER JSC Skopje, received a letter of interest from the EBRD to provide funding for the construction of gas main pipelines Section "Gostivar- Kichevo" and Section "Sveti Nikole-Veles". The Government hopes to engage in a similar partnership for the entire country in the future.

Plans for further connections to the international gas transmission pipeline network are yet to be finalized. The 2010 Feasibility Study proposes six possible interconnection points: two to Greece, one to Bulgaria, and single connections to Serbia, to Kosovo and Albania.

In accordance with the development of international gas pipelines there are several possibilities for interconnection of the gas pipeline system of Macedonia, with, TAP (Trans Adriatic Pipeline), Turkish Stream, LNG terminals in Greece and with the neighbours through CESEC, EUSAIR and PECI/PMI Projects.

3.3.5 Distribution system

In February 2020, the Government announced that tenders for a contract for a PPP to finance, design and construct the Natural Gas Distribution System in the country are requested by 10th of August 2020. Grant Thornton Greece has been selected by the EBRD to perform an updated feasibility study regarding the development of distribution networks in the country for the purposes of this tender. The delivered report by Grant Thornton Greece updates a 2014 feasibility study (herein after 2014-FS) mainly in terms of costs and assumptions. This update aims to support authorities towards the preparation of a competitive selection process for the award of a nationwide concession / public private partnership (PPP) for the construction and operation of distribution networks. The duration of the concession/PPP scheme is estimated of the order of 30 and 35 years. Potential values of the Concession/PPP Contract were obtained in the report through a baseline and five alternative scenarios. Capital costs are estimated to be in the range from 241 to 745 mil € depending on the scenario considered. Two additional scenarios investigating the impact of increased WACC and bank loan repayments have been also examined. Forecasted natural gas demand at the end of the concession period is in amount of 9,113,161,092KWh.

In addition to using natural gas in industrial and municipal buildings, there are initial activities in the municipalities of Kumanovo and Strumica to connect interested households to the local gas distribution grids.

Natural gas demand

When these plans will be completed, the forecasted natural gas demand has been estimated by the feasibility study and is outlined in the table below.

Year	2020	2025	2030
Residential	0.095	0.170	0.310
Commercial/public services	0.043	0.070	0.095
Industry	0.140	0.210	0.335
Total end users	0.280	0.450	0.740
Power generation	0.930	1.100	1.100
Grand Total	1.210	1.550	1.840

Table2. Forecast of the total consumption of natural gas till 2030 in bcm²

This substantial increase in gas demand, all of which would be supplied from one connection and one supplier, would obviously have serious implications for the security of supply. The effects of a disruption would be much more damaging and costly.

Still NER JSC has conducted market survey and has reviewed the forecast of the total consumption of natural gas from the Feasibility study (2010) into the new Feasibility study (2019) for the gas interconnector with Greece with the following projections of the demand:

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Energy sector	610	606	604	603	601	603	604	605	605	606
Industrial sector	192	218	221	223	226	250	287	291	291	291
Distribution sector	14	67	155	233	322	384	452	514	564	625
Total	816	891	980	1059	1148	1238	1343	1410	1460	1522
Total for IGF (minus 170 mcma)	646	721	810	889	978	1068	1173	1240	1290	1352
Total for IGF (minus 350 mcma)	466	541	630	709	798	888	993	1060	1110	1172

Table3: Forecast evolution of the total natural gas demand per sector³

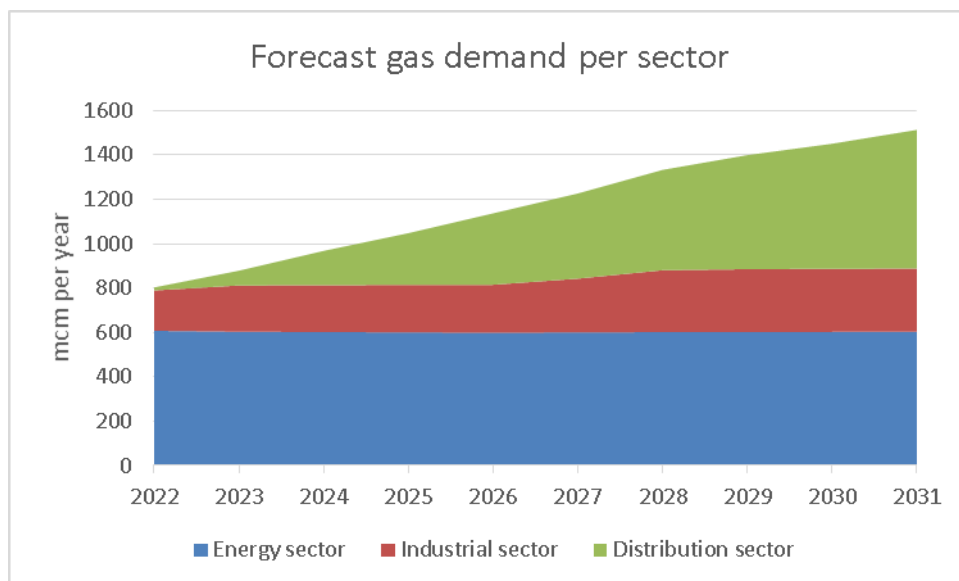


Chart3: Forecast evolution of the total natural gas demand per sector

² Source: Feasibility study for the National gas pipeline system in the country (2010)

³ Feasibility study for gas interconnector with Greece (2019)

Financing

Previously EBRD in their letter dated from 30th of May 2018 has expressed interest to be financing institution to provide funds for the preparation and implementation of the gas distribution network project. Because the Project is of Governments key priority investments EBRD express readiness to mobilize internal funds for technical assistance for project preparation, design and implementation, including capacity building of the implementing entity.

Additionally the Ministry of Economy and European Bank for Reconstruction and Development in December 2019 have signed an Agreement in respect of the Client's contribution towards the provision of consultancy services arranged by the EBRD Infrastructure Project Preparation Facility in relation to the Concession for Natural Gas Distribution in the country.

3.4 SECURITY OF SUPPLY

3.4.1 Background of 2009 crisis

In January 2009, the South Eastern European region including Albania, Bosnia Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Montenegro, Romania, Serbia and Kosovo suffered from a disruption of the flow of Russian gas supplied through the Ukraine. The disruption in supply coincided with a period of particularly cold weather and severely affected a region already suffering the adverse effects of the economic crisis. The region was supplied from Russia through three different transit routes. Romania, Bulgaria, Greece and to Macedonian territory with gas directly from the Ukraine. Serbia and Bosnia Herzegovina are also supplied from the Ukraine, but the connection is through Hungary. Croatia takes the gas through Austria and Slovenia. As the three systems are not connected, there could be no cooperation in the event of a major disruption.

Of all the States in the region, Bulgaria and our country are particularly vulnerable to interruption from the Ukraine as these countries are 100% reliant on Russian gas. Bulgaria has a very small gas storage capability of just a few days, whilst on Macedonian territory there are no gas storage facilities. Most of the other Balkan States now have gas storage and interconnection facilities to enable them to cope with any gas supply interruption of up to two months.

Bearing in mind the present political difficulties between Russia and the Ukraine, another disruption in natural gas supplies is possible. Only the development of alternative cross-border connections and gas storage facilities will improve the security of gas supply.

The cancellation of the South Stream project whereby a Russian pipeline route would cross the Black Sea and make landfall in Bulgaria has put on hold the Macedonian plans to connect to this system. Officially, the project is closed, but it may not be necessarily completely dead. The original plan to connect a Black Sea pipeline may still be viable. The planned South Stream components can be used to build an alternative route via a landfall in Turkey to transport large amounts of gas to Southern Europe. A great deal of design and feasibility work has already been done on these routes. It is interesting that a flow of 63 bcm has been mentioned for an alternative route – the same volume as would have been provided by South Steam. Of this, 13bcm would go to Turkey and a further 50 bcm to a Greek border hub for further distribution.

If a new gas hub were to be created in Turkey, then Bulgaria and Romania could be supplied merely by reversing the flow in existing pipelines.

Other promising routes are the Trans-Adriatic Pipeline (TAP), which would bring Azerbaijani gas to Italy via the Balkans, and LNG imports via a proposed terminal on the Croatian island of Krk (which now looks increasingly likely) and an existing and

planned LNG facility in Revithoussa and Alexandropolis in Greece.

These sources of supply can in no way be seen as alternatives to South Stream as their combined flow rates will be much less. The TAP will initially provide 10 bcm and the Krk terminal up to 6bcm and it is likely that Russian gas will maintain a price advantage.

3.4.2 Supply crisis management

Since 2009, the Government has taken steps to manage a gas supply interruption. The Ordinance on Natural Gas Supply Crisis published in 2013 allows a committee to be formed in the event of a supply interruption. This committee is established under the leadership of the Minister of Economy and is comprised of two officials from the Ministry of Economy and representatives from the system operator for natural gas, the distribution companies, gas traders, suppliers, and the Energy and Water Services Regulatory Commission. In the event of an interruption, the committee assembles, evaluates the crisis together with the Centre for Crisis Management, and informs the government. The new Ordinance updated in accordance to the new Energy Law is in the process of adoption.

This Ordinance, which implements the provisions of the Directive 2003/55/EC concerning the specific customers (households) and protecting measures during the natural gas crisis, enumerates the protected natural gas consumers as follows:

- households;
- hospitals, clinics and special health institutions (first aid emergency stations, blood transfusion centres, dialysis centres and other health institutions)
- facilities of special interest to the economy, lives of people and defence of the country,
- care centres for elderly persons,
- kindergartens and
- zoos.

It further sets the criteria for proclaiming crisis situation in supply of NG, namely:

- reduced import,
- extremely low temperatures in uninterrupted duration of five days and
- periods of extremely high consumption of gas during winter months.

Moreover, it obliges natural gas suppliers to lay down in the supply contracts they sign the minimal needed quantities of natural gas. For present purposes, minimal quantities are considered the contracted quantities between the suppliers and consumers. Moreover, the natural gas suppliers of protected consumers are obliged to inform the natural gas traders about the minimal quantities for protected consumers for the subsequent year not later than 1st of October (in the current year)

The measures to be taken are ranked into 11 levels according to the severity of the supply situation. The measures start with a reduction of all deliveries from the transmission system excepting the CHP plants and district heating systems, which are regarded as the priority. The next step is to disconnect all consumers that have a dual fuel capability and are able to switch to an alternative fuel.

Finally, a gradual reduction of supplies can be made whilst maintaining deliveries to the CHP plants, district heating and protected consumers as long as possible.

Macedonian Ministry now participates in the Security of Supply Coordination Group the Gas Subgroup under the Energy Community.

The Secretariat of the Energy Community participates in the EU Gas Coord.Group.

3.4.3 Impact of future disruptions

During the summer of 2014, a stress test was carried out under four possible scenarios.

- Disruption of the Ukrainian route to the EU during a period of 1 month (1.2.2015-28.2.2015)
- Disruption of the Ukrainian route to the EU during a six month period (1.9.2014-28.2.2015)
- Disruption of all Russian supplies to the EU during a period of 1 month (1.2.2015-28.2.2015)
- Disruption of all Russian supplies to the EU during a six month period (1.9.2014-28.2.2015)

Our country together with Bosnia and Herzegovina, Moldova, and Serbia would be among the countries most affected in case of supply disruptions of gas in Europe.

This is a returning message of any of the ENTSOG simulations. Within a few days (at most weeks), in all the analysed scenarios, the availability of gas would be reduced by between 80%-100%, in these countries, with the exception of Serbia.

Domestic production covers in Serbia 1/4 of demand. Another 1/4 of demand can be covered from storage facilities. In Serbia, the gas storages reached a level of almost 500 million cubic meters already in August 2014 which, together with domestic production, would allow for undisturbed supplies to households and some plants producing heat from October until February when the storages start to be depleted.

Those Contracting Parties which lack sufficient storage possibilities to cover the shortfalls raised the issue of the difficulties to find gas storage capacities within the EU and import gas from abroad in case of disruption scenarios. These difficulties include a lack of clear Third Party Access rules (implemented in terms of the 3rd Energy Package) on the interconnection points with the EU Member States, lack of available quantities or discriminatory pricing for the transport of gas from the storages or simply lack of clarity and trust on whether they would be able to use the quantities stored in the storages of the EU Member States and access them in case of a supply crisis.

Since gas storage and domestic production would provide none or only limited relief in the event of supply disruptions, all Contracting Parties analysed the potential demand side measures to be taken in order to cover for the potential shortages of gas. The biggest potential for such measures is in the Macedonian case and Bosnia and Herzegovina where households consume only relatively small parts of gas (20%) and demand side measures can take place on the side of the industry. However, a general conclusion can be drawn that the exact potential of such demand side measures is not fully known to the Contracting Parties and regulation of energy prices for industry prevents deployment of market based demand side measures.

An important demand side measure is the possibility of fuel switching from gas to fuel oil for district heating plants (up to 30% of winter daily demand in Serbia and Bosnia and Herzegovina and up to 2/3 in Macedonian case) or switching from gas to electricity. For example in Moldova gas is consumed mainly in district heating and by households (76% of total gas consumption) and its power generation is mainly gas fuelled (80% of electricity production). In view of this situation, i.e. difficulty in reducing gas consumption due to low level of consumption by the industry, Moldova will need to rely on switching to fuel oil for heating and switching electricity production from gas to coal.

Nevertheless fuel switching may not take place in industrial sectors where consumers are not prepared for switching and lack the appropriate equipment. Moreover, as regards fuel switching and switching to electricity, an important logistical problem arises: namely the lack of significant oil stocks for heating purposes (in Serbia, Moldova and

Bosnia and Herzegovina) and coal stocks (in Moldova) for electricity production. Some of the Contracting Parties raised the issue of the lack of financial resources to increase the stocks.

National infrastructure capacities are very limited and prevent a flexible flow of gas and diversification of sources. The new interconnector “Lasi – Ungheni” between Romania and Moldova is not yet used (except only for the Ungheni district (1-3% of the total consumption)) and the interconnector Serbia-Bulgaria did not enter yet in the construction phase. These limited infrastructure options, a regulatory framework that does not allow the use of the existing infrastructure flexibly, as well as the lack of a developed gas market result in a situation where any disruption of gas from Russia and/or disruption of gas through Ukraine have a very serious impact including on household consumers in those Contracting Parties.

Recommendations

While the general recommendations made in the Communication are also to be applied for the Contracting Parties in this region, the Commission considers, in the light of the previously discussed results and assessments, the following specific recommendations particularly relevant for the concerned Contracting Parties:

Common recommendations to all Contracting Parties

1. Full use of infrastructure on market terms. Although in most of the Contracting Parties the provisions of the second energy package apply, more detailed rules of the 3rd Package will become applicable as of 1 January 2015. Full application of these rules will allow using the capacities of infrastructure to the full extent and flexibly, allowing for diversification of suppliers of gas and for the transport of gas for storages. An important pre-condition to apply the Third Package regime to infrastructure is effective implementation of unbundling. Therefore, the Contracting Parties need to introduce unbundling as soon as possible.

2. Deregulation of gas and electricity prices for industry. When it comes to demand side measures targeting industry and power production, it is crucial to allow that the cheapest alternatives are being deployed first and therefore Contracting Parties need to allow for full market opening at national level for electricity and gas markets for industrial customers.

3. Examining in more detail the potential of the demand side measures. The Commission recommends examining in more detail the potential for demand side measures, both for district heating and for industry at the level of individual companies.

Such an examination should also include the potential of switching industrial consumers from gas to oil – a topic which has not been explored sufficiently at the company level.

4. Tackling the logistical problems that may occur in case of fuel switching. All Contracting Parties pointed to logistical problems that may occur in the event of fuel switching for heat and electricity production. Building up stocks of oil, anthracite and coal is a matter of time (and logistics) but not of a lack of supply – oil, anthracite and coal are abundantly available on world markets. The authorities should therefore urgently address this issue.

5. Establish convergence of the definition of protected customers. In order to effectively apply measures on the demand side and prevent free-riding, the Contracting Parties need to define first the level of consumption of protected customers using possibly converging definitions of protected customers. Since the Security of Supply Regulation 1938/2017 does not apply in the Energy Community, the Contracting Parties could voluntarily make an attempt to converge these definitions. This would be a building block to transpose the EU acquis in the Contracting Parties in the next future.

6. Application of internal energy market rules on the flow of energy between the EU Member States and the Energy Community Contracting Parties. Given the limited options to cover potential gas supply disruptions and the lack of mechanisms and developed gas markets allowing self-regulating responses to a sudden drop in the supply of gas from single supply sources, the Contracting Parties are bound to cooperate on a regional basis and negotiate at the level of governments. Unfortunately, such cooperation is rather weak, in particular in the Balkan region. This is, to a great extent, a result of the missing dialogue with the EU Member States. Closer cooperation of authorities and the consistent application of the EU's internal market legislation on the borders between the Contracting Parties and the EU Member States are elements that could improve the security of supply in the Contracting Parties and the EU Member States. Positive examples include the solutions found around the reverse flow from Slovakia to Ukraine. However, more can be done, in particular as regards the supply in the Balkan region in particular as regards the use of pipelines between Hungary and Serbia and Romania and Moldova. In order to facilitate such cooperation with a formal act, the Commission is issuing, in parallel with this report, a Recommendation to the EU Member States to cooperate with the Contracting Parties in the application of the Third Package and on questions of security of supply. However this needs to be followed by the necessary negotiations that need to take place between the EU Member States and the Contracting Parties in the region on how to use the common infrastructure and on which terms in case of a crisis.

7. Developing of new infrastructure. Improving infrastructure and building interconnectors is a long term challenge. The Commission regrets the lack of progress in finalizing projects such as the interconnector between Bulgaria and Serbia and the construction of the Krk LNG terminal in Croatia that would allow for diversification options for the Western Balkan Region. The Commission therefore urges the parties concerned to rapidly address the outstanding hurdles to the realization of these projects.

8. Increase in the demand for electricity due to switching for heating purposes, and decrease in electricity generation due to difficulties in supply of coal and heating oil are a likely effect of the analysed disruption scenarios and lowering of supply of gas. The Commission recommends monitoring of the situation of supply and demand of electricity at a regional and national level closely and take precautionary measures to ensure stability of grid and necessary back-up capacities in particular for nuclear power production.

Especially for Macedonian case:

Reduction of gas consumption plan. Due to a limited number of industrial consumers it is feasible to prepare for each individual industrial plant gas consumption reduction plans that could be applied in terms of emergency.

In parallel with the stress test, the Energy Department conducted a survey on the expected loss of supply to each consumer and their status as far as ability to switch to an alternative fuel. The results of the survey are set out in the table below.

Category	Loss of NG Feb 2015	Loss of NG Sep to Feb 2014/15	Alternative fuel options Feb 2015	Alternative fuel options Sep to Feb 2014/15	Plants with no alternative fuel
CHP	0.0337	0.2089	0.002	0.010	2 of 3
Heat plants	0.0111	0.0511	0.0111	0.0511	0 of 4
Industry	0.00374	0.0190	0.0028	0.0135	9 of 25

Commercial and public	0.00118	0.00371	0.00106	0.00344	5 of 12
Total	0.0498	0.2827	0.01699	0.0781	16 of 44

Table 4. Natural gas disruption and alternative fuel availability all figures in bcm

The main effect of disruption will be felt by the two CHP plants that have no dual-fuel capability. The heat plants can switch to heavy fuel oil and they can cover the heat supplied from the CHP plants so that the effect on residential heating should be minimal. The electricity produced from the CHP plants can be replaced by the existing generation or imports. There are nine industrial loads, which cannot switch fuels, and these include the two steel plants. In the commercial and public building sectors, five of the consumers are not able to switch fuels. Any transport using compressed natural gas can readily switch to other fuels.

A survey was conducted of the interrupted consumers asking for them to estimate the costs involved in switching fuels. Of those plants that responded, the total estimates were equivalent to euros 1.7 million for one month in winter and euros 8.8 million for the six winter months. The Energy Department estimated that if all customers had responded, the six monthly costs would have been some euros 76 million but this is a very rough estimate, as the methodology for calculating the financial losses is not specified.

As the supply comes effectively from one supplier along one pipeline, the location of the interruption is irrelevant. The only crisis measure that can be adopted is a gradual reduction in gas pressure and the interruption of all consumers that have a dual fuel capability. Operating the essential consumers on reduced gas pressure would maintain adequate supplies for a maximum period of one week but possibly for only 2 to 3 days.

At present, there are no residential consumers directly connected to the gas distribution system but the district heating customers would be threatened if supplies to the CHP and heating plants were cut off. As these plants take 80% of the current supply, the situation would soon be critical. The CHP plants account for nearly 60% of the consumption and have no dual fuel capability. The heating plant boilers are dual-fuel and can switch to heavy fuel oil and these could meet the peak load lost from the CHP plants.

If the extension of the gas transmission and distribution systems goes according to the existing plan, then the residential consumption will expand rapidly leading to an increased vulnerability in the event of the gas interruption.

3.4.4 Options to strengthen the security of supply

On Macedonian territory there are neither indigenous natural gas resources nor a gas storage facility and all gas is imported from Russia (via Bulgaria, Moldova, Romania, and Ukraine) through a single transmission line that crosses the Bulgarian border at Deve Bair.

The pipeline was constructed in 1997 and runs almost 98 km to Skopje, connecting Kriva Palanka, Kratovo, and Kumanovo on the way. The installed capacity is 0,8 bcm/year at 54 bar with a possibility of an upgrade to 1,2 bcm/year at a higher pressure. The present through put capacity is 145,000 m³/h. Additional 97km were constructed till 2019.

Makpetrol Prom Gas supplier issues annual contracts to the customers, while JSC Makpetrol is operating a medium term contract with Gazprom revised on annual basis. It is understood that the Macedonian companies pay Gazprom directly at the Bulgarian border without the intervening transit fees.

The contribution of natural gas to the overall energy consumption has not increased

significantly over the past decade. Gas accounts for less than 4% of the country's energy supply.

Therefore the need for new gas supply routes is inevitable for Macedonia.

CESEC (Central and South East Gas Connectivity)

Initiative CESEC aims to promote the diversification of natural gas supply and security of supply in the region by enhancing the regional infrastructure and improving the integration of markets through joint engagement of all EU Member States and of the Parties to the Energy Community.

Memorandum of understanding (MoU) and its action plan under the European Commission initiative of Central Eastern and South-Eastern European Gas Connectivity (CESEC) was signed in 2015 in Dubrovnik, Croatia. The document will pave the way for the closer integration of the EU and Energy Community energy markets. The "Interconnector Greece/Bulgaria – Macedonian gas system" was also listed among "other projects" in the CESEC Action Plan. Accordingly we have fulfilled obligations regarding the CESEC Action Plan 2.0 monitoring reports.

MoU was signed on 14th October, 2016 between MER JSC Skopje and DESFA S.A. WG was also established between MER JSC and DESFA for construction of gas interconnection for transmission of natural gas between the two countries.

MoU was also signed on 1st of August 2017 between Ministry of Energy of Republic of Bulgaria and Macedonian Ministry of Economy for construction of gas interconnection for transmission of natural gas between the two countries. Based on MoU Agreement was signed between MER JSC and Bulgartransgaz EAD for the implementation of feasibility study for the construction of new gas interconnection between the two countries.



Picture 8. CESEC Projects

PECIs/PMIs 2020

During 9th Energy Community Secretariat concluded agreement with a consortium of REKK and DNV GL to help the Energy Community Secretariat and the Groups for electricity and gas for evaluation of projects of interest for the Energy Community in the development and application of methodology to identify projects of interest to the energy community for 2020. Representatives of the Ministry of Economy participated actively in the work of this Working Group. As a result of this the preliminary list of PECIs/PMIs 2020 was agreed by the group for gas and electricity at the meetings at technical level. Following the positive opinion of the Regulatory Board of the Energy Community ("ECRB") of the consistent application of the assessment criteria and the cost / benefit analysis, the proposed list will be then discussed and agreed at the

Permanent High Level Group of the Energy Community ("PHLG"), and adopted by a Decision of the Ministerial Council of the Energy Community to establish a list of projects of interest for the Energy Community and Projects of mutual interest (PEICs/PMIs") for 2020. The selected PEICs projects will benefit from streamlined permitting and the possibility of regulatory incentives, cross-border cost allocation and funding under the EU's Instrument for Pre-Accession Assistance and the Neighbourhood Investment Facility.

The list of projects of interest to the Energy Community (PEICs) for the year 2018 covers 2 projects from Macedonian promoters for (PEIC) Project of interest to the Energy Community for gas connection with the Republic of Serbia and (PMI) Project of common interest for gas connection with Greece. The same projects were proposed for selection in the list of projects of interest to the Energy Community (PEICs) for 2020 plus additional Interconnection with Kosovo.

Project of mutual interest ("PMI") for gas interconnection with Greece

The Project envisages the construction of 126 km long gas pipeline, where 70 km is on Macedonian side while 56 km is on the Greek side. It is planned to be designed, financed, built and operated by the respective companies.

The starting point of the routing is proposed to be located in the border with Greece near Idomeni village and Gevgelija city, where the Greek part of the pipeline will end. The ending point was the already constructed valve station (block station BS 7) of the new pipeline "Shtip – Negotino", near the city of Negotino¹



Picture 9 PMI Project Interconnector to Greece

In January / February 2019, JSC MER and DESFA completed a FS with CBA for the gas interconnector. The aim of the report was to assess the technical, environmental and economic feasibility of the project, in order to support the investment decisions to be taken by the two sponsors (DESFA and NER) and their subsequent endorsement by the respective National Regulating Authorities for Energy and State authorities. In addition, the report will support the applications to be submitted by the sponsors to national and international financing institutions that will provide grants and/or loans for the implementation of the project.

Each part of the interconnector (in Greece and in Macedonia) will be built and operated by the respective sponsor as a stand-alone project supported by an Interstate Agreement. A joint market test will be carried out before the Final Investment Decision.

The results showed that the project can ensure a transportation tariff lower, during the evaluation period, than the one applied until now while it will provide to the country very

- Prepared Feasibility Study by DESFA SA and NER AD Skopje in January-February 2019.
- Project Application Submitted after the Fourth Open Call for Co-financing of Infrastructure Projects under the Western Balkans Investment Framework IPA Instrument, November 2018 and updated in April 2019. Investment grant application has positive screening status. The final decision was made by WBIF for 20% investment grant in June 2019;
- Request for technical assistance (100% grant) for preparation of Environmental Impact Assessment Study and Baseline project to Connecta (Technical Assistance for Connection in the Western Balkans). The application was approved in January 2019. CBA, ESIA with Infrastructure Project are finished and the Detailed Design with Supervision is in the process of being developed by Connecta;

Future steps for finalisation of the Project:

- Completion and endorsement (by sponsors) of Feasibility Study;
- Detailed Design with Supervision;
- Tender documentation and Agreements preparation;
- Agreements with users;
- Securing of Funding/Granting (in principle the project is eligible for financing/granting by EIB, EBRD through WBIF)
 - FID;
 - Design and Permitting;
 - Issue of Tenders;
 - Award of Procurement, Services and Construction contracts and
 - Commissioning in 2022.

EIB and EBRD express interest to finance the whole Project of mutual interest ("PMI") for gas interconnection with Greece.

The summary cost estimation of the two pipeline parts, in Greece and on Macedonian soil with all ancillary installations i.e. valve stations, scraper stations, cathode protection, telemetry is 49 and 54 million euros each. The Greek part contains also the Border Metering Station.

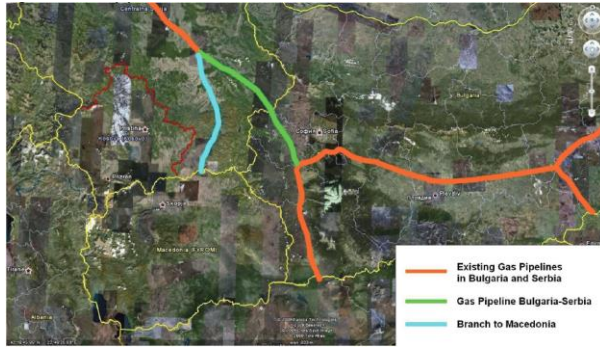
Project of interest for the Energy Community (PECI) for gas connector to Republic of Serbia

Considering (PECI) Project of Energy Community Interest - Gas Interconnector between Macedonian gas system and Republic of Serbia, there are on going activities for harmonization of the similar MoU with the Republic of Serbia.

The Project has received the status of a Project of Interest to the Energy Community by the Energy Community. The project code in the Ten-Year Network Development Plan is TRA-N-965.

- Pre-feasibility study with baseline project 2010 prepared
- Master Plan prepared with basic project 2010
- There are on going activities for the gasification of the south part of Serbia, also.

No financial institution has expressed interest about this project yet.



Picture 10. Gas interconnector to Republic of Serbia

The transit pipeline link from Serbia to Macedonian soil should be with a maximum operation pressure of 50 *bar*. The connection should be realized along the route “Niš-Leskovac-Vranje” to Serbia-Macedonian border with a length of 115 km. The main pipeline Serbia-Bulgaria (along the route “Dupnica-Kalotina-Dimitrovgrad-Niš”) is connected to the construction of the compressor station in Dupnica in Western Bulgaria. It should provide satisfactory pressure in Southern Serbia. The maximum operation pressure in Bulgaria is 54 *bar*. Due to that the pressure in the main pipeline network at the region of the Serbia-Macedonian border should be 50 *bar*.

The diameter of the main pipeline branch “Niš-Leskovac-Vranje” to Serbia-Macedonian border (Northeast of the town of Kumanovo) is DN500 (20”) or DN700 (28”), depending on the hydraulic calculations.

The pipeline Republic of Bulgaria-Republic of Serbia capacity (route “Dupnica-Kalotina-Dimitrovgrad-Niš”) should provide total transit to Serbia of 3-4 bcm/year.

The necessary natural gas quantities for Macedonian users from the branch through Republic of Serbia are about 0.5-1 bcm/year. Taking into account the possibilities for delivering LNG gas quantities from Macedonian - Greek Interconnector, this must be reversible link.

In the case of link of Serbia toward Macedonian soil from the main pipeline network of Republic of Serbia it is necessary to construct a compressor or reduction station at the Serbian -Macedonian border. So according to the law and regulations in both states the maximum operation pressure in the main pipeline networks is 50 *bar* and 54 *bar*.

Trans Adriatic Pipeline (TAP)

Another option that could be considered is a connection to the Trans Adriatic Pipeline (TAP) through Greece or Albania. This connection would have the advantage of providing an alternative supplier – that of Azeri gas from the “Shah Deniz” field in the Caspian basin that is expected to come on stream in 2020. The pipeline could also transport gas from Iraq, Turkmenistan and Mediterranean in future so would form a secure supply route.

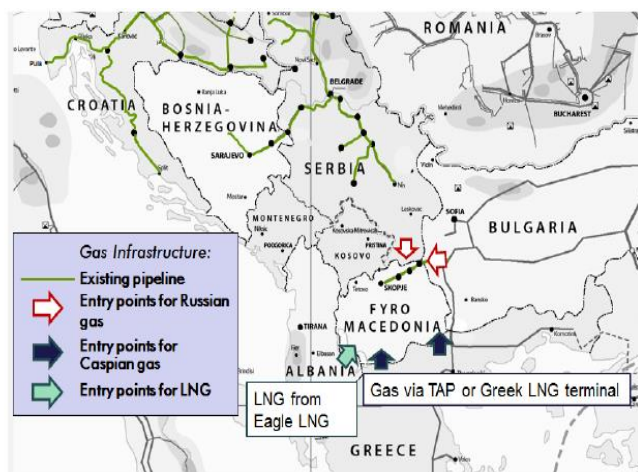


Picture 11. Proposed routes for the Trans Adriatic Pipeline

There is also a proposal to connect the TAP between Albania northwards along the Croatian coast, the Ionian Adriatic Pipeline (IAP). This connection, along with a proposal to build an LNG terminal on the island of Krk of the Croatian coast, would substantially increase the security of supply in the region. This coastal pipeline would form part of the Energy Community gas ring concept whereby the gas markets of Albania, Bosnia-Herzegovina, Croatia, Kosovo, Macedonian soil, Montenegro and Serbia could be linked. The ring would have the advantage of having the capability of being supplied from multiple directions and would facilitate the development, regional gas market. Another advantage would be that this system could be developed incrementally by adding new entry points and pipeline sections. A system of gas-fired power stations could help underpin the world in countries with relatively small gas demands such as Macedonian one, to Albania, to Montenegro and to Croatia.

Gas interconnection to Albania

MER JSC and ALBGAZ JSC in September 2018 have signed a Memorandum of understanding ("MoU") between Albanian gas TSO ALBGAZ JSC and JSC MER. The Memorandum with ALBGAZ JSC is in line with the realization of the project for the construction of gas interconnection for natural gas transmission that should connect Macedonian soil and the Republic of Albania.



Source: ENTSO-G map

Picture 12. Gas interconnector to Republic of Albania



Picture 13: Gas Master Plan of Albania

The interconnection of the Macedonian gas system to the TAP could be through Greece near Gevgelija or near Bitola to the Macedonian-Greek border. Another opportunity to connect the TAP is through the Republic of Albania if the project IAP (Ionian Adriatic Pipeline) is realized. The route of the pipeline connection starts at the area of the town of Fieri, runs in Northeast direction toward the town of Elbasan along the Shkumbini River and then runs in East direction up to the town of Lin on Ohrid Lake and in North direction is crossing the Albania-Macedonian border southwest of the city of Struga. This pipeline is designed with a diameter of $DN500$ or $DN700$, and maximum operation pressure of 80 bar , length of about $90\text{-}130$ and a cost of 140 million euros. It could transit about $0,5\pm 1\text{ bcm/year}$. A reduction station of $80/54\text{ bar}$ should be constructed on the Albania-Macedonian border.

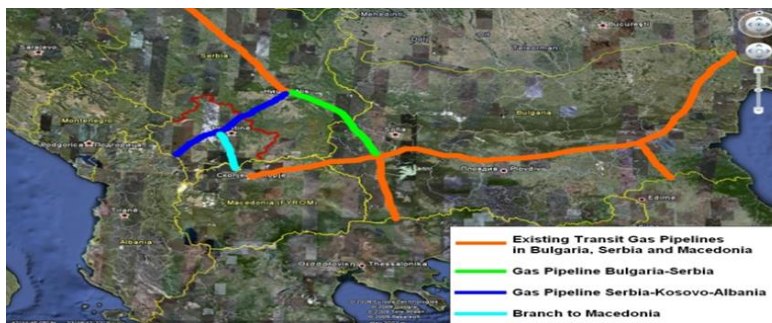
Gas Interconnector to Kosovo

On 11 February 2019, the Macedonian Minister of Economy and the Minister of Economic Development of Kosovo signed a Memorandum of Understanding in the

energy sector between the two Ministries, which is expected to intensify bilateral relations in the energy sector in line with national policies and strategies, by defining priority areas for cooperation such as: electricity sector, coal, natural gas, renewable energy sources, energy efficiency, security supply in energy, and the preparation of relevant infrastructure interconnection projects for electricity and gas, and other project initiatives.

On June 2019, a technical assistance grant from WBIF (West Balkan Investment Framework) mechanism for preparation of feasibility study for Kosovo Interconnection was approved. The project is included in the List of Priority Projects and in the Ten Year Network Development Plan (TYNDP) with code TRA-N-966.

A Feasibility Study and Environmental Impact Assessment Study are underway. The project will be funded by the EBRD. The route for gas interconnection would take place from the city of Pristina, near Urosevac in Kosovo, to the Kosovo - Macedonian border (northwest of Skopje). It then continues to the south and connects to the future main gas pipeline network in Macedonian City of Skopje. The total length of the gas pipeline is 85 km. At a diameter of *DN500* (20 ") or *DN700* (28") depending on the hydraulic calculations, it is possible to order the construction of a compressor station in the middle of the route.



Picture 14. Gas interconnector to Kosovo

Storage facilities

Access to storage facilities would also strengthen the security of supply but this is prohibitively expensive for Macedonian economy to consider building and there is limited storage in Bulgaria and Serbia (Banatski dvor).

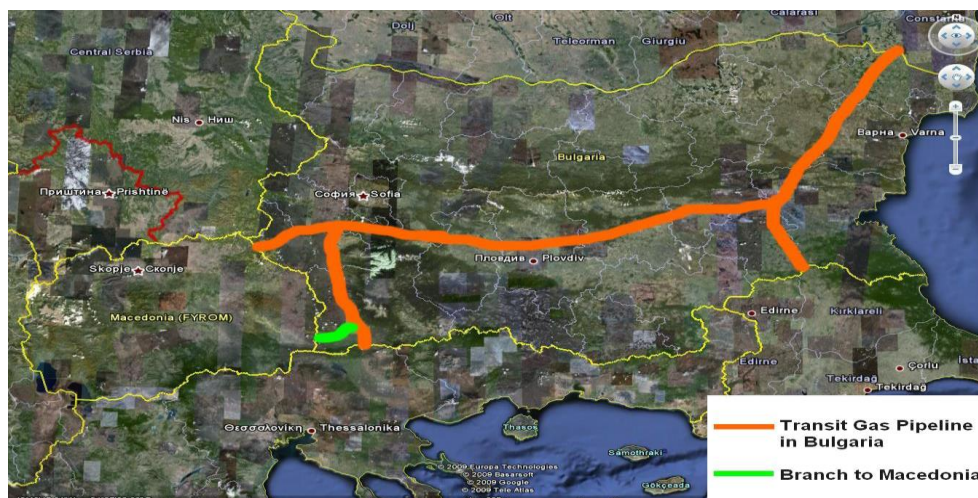
New gas interconnector to Bulgaria (CESEC)

Access to Greece via a two-way Trans Balkan pipeline is a possibility. At present Macedonian TSO has no agreement to use the Sidirokastro to Kulata pipeline from Greece to Bulgaria that was used in the 2009 crisis to provide LNG from the Revithoussa terminal in Greece to Bulgaria. There is over 8.5 bcm of unused entry capacity available from the Greek system, most of it from the underused LNG terminal.

In this context MoU was signed on August 1st, 2017 between Ministry of Energy of Republic of Bulgaria and Macedonian Ministry of Economy for construction of gas interconnection for transmission of natural gas between the two countries. Pursuant to the Memorandum, it was agreed with Bulgaria to deepen the cooperation in the energy sector by considering the possibility of building new interconnection gas connection between the gas systems of the two countries.

Also on the basis of the signed Memorandum, Agreement was signed between the Joint Stock Company for performing energy activities Macedonian Energy Resources Skopje in state ownership and Bulgartransgaz EAD for the implementation of feasibility study for the construction of new gas interconnector to Republic of Bulgaria. The document should include analyses of the technical, market, economic, financial and regulatory aspects of the project, and identify solutions for the necessary infrastructure

on the territory of both countries. On the last meeting between the two ministries on 7th May 2019 it was emphasized that the work of this working group should be intensified in the future in purpose for realization of the construction of new gas interconnection between the two countries!



Picture 15. New gas interconnector to Bulgaria

The output pressure supported by the CS "Petrič" is 54 *bar*, as it is the maximum operation pressure of the main gas pipelines in the Republic of Bulgaria and Macedonia. The maximum operation pressure of the second connection from the Republic of Bulgaria toward the Macedonian soil should be 54 *bar*, too. The new main gas pipeline length in the territory of the Republic of Bulgaria is 25-26 km. The diameter of the second connection from the Republic of Bulgaria toward the Macedonian soil could be DN700 (28"), DN800 (32"), or DN1000 (40"), depending on the hydraulic calculations. The diameter could be DN1000 (40"), due to the fact that the gas pipeline starts at the compressor station.

At present Macedonian security of supply will remain in a highly vulnerable position as far as security of natural gas supply is concerned but with clear vision and strong determination to overpass all its obstacles in the future process of securing the energy supply.

3.5 COVID-19 CRISIS MANAGEMENT

3.5.1 Key Policy Responses by Macedonian Government

Fiscal

The government has adopted fiscal measures to help address firms' liquidity problems, protect jobs and support the most vulnerable. The measures, which are temporary, include subsidies on private sector wages and social security contributions for firms that maintain employment, postponement of income tax payments, loans at favorable terms and loan guarantees, and sector-specific support. Also, vulnerable households will receive financial support through existing social assistance schemes and cash vouchers. Students will receive partial re-imbursment of university tuition fees and IT courses. Finally, the government has implemented price controls on basic food products, medicines, and disinfection products, and abolished the import duty on medical supplies.

Monetary and macro-financial

The National Bank has cut its policy rate twice since the start of the crisis by a cumulative 50 basis points to 1.5 percent. The fees for withdrawing and returning cash to the National Bank's central vault have been abolished to minimize any risk of transmitting the virus infection by coins and bills. In addition, the National Bank has

reduced by 60 percent the amount of CB bills offered to banks, thus providing additional liquidity to the economy. On financial sector measures, the National Bank has revised its credit risk regulation, to encourage banks to restructure loans temporarily, and has relaxed the loan classification standards for NPLs. It has also reduced the base for the reserve requirement by the amount of new loans to firms in affected sectors and has extended the deadline for banks to submit their first Internal Liquidity Assessment Report in order to allow them to focus on providing credit while maintaining the quality of the loan portfolio.

Exchange rate and balance of payments

The National Bank intervenes regularly, given the de-facto exchange rate peg.

3.5.2 EWRC interventions

EWRC also in their press release dating from 31st March 2020 also informed the public that the recommendation they sent two weeks ago to the companies that perform energy activities, as well as to the public companies that are water service providers due to the situation with the pandemic Covid - 19 remains in force, to refrain from disconnecting the citizens from the appropriate systems for supply of electricity, heat and water due to unpaid bills during the state of emergency.

3.5.3 Crisis management by Macedonian gas sector

Must stress that Macedonian gas companies were also hardly hit with the COVID 19 pandemic.

In this context pursuant to Article 14 paragraph 2 of the Energy law the Ministry of Economy requested from the gas companies to prepare contingency plans for Crisis management with the COVID 19 pandemic.

TSO GA-MA in their letter dated on 07th of April 2020 as an operator of critical infrastructure has prepared a contingency Plan on TSOs' preventive measures based on good practices in case of pandemic threats, which are the following:

1. Follow main advises from competent authorities;
2. Establishment of a task force to manage the emergency;
3. Hygiene;
4. Disinfection of workspace;
5. Disinfection by specialized companies;
6. All technicians are divided in teams and shifts;
7. All administrative workers may be sent home (work from home);
8. The workstations have to stay at appropriate safety distance;
9. All physical meetings are banded (skype or phone);
10. Use of disinfection stations (hand rubbing alcohol);
11. Unmerge people who are working together;
12. Avoid movement of people, only in case of urgency;
13. Reduce maintenance and service activities (less contact and less workload for dispatchers). Focus on urgent works only;
14. Supply people with protection (mask, sanitizers, gloves etc.);
15. All dispatchers not operative in the control room are at home in "isolation";
16. Establish separate teams from dispatchers and ensure that they don't contact with each other;
17. Separate people from each other, if possible, use another room/area;
18. Ensure minimum 1 meter between workspaces;
19. Handover a shift in written or via a video call or a phone call - without physical contacts;
20. Decide amount of days to stay (7-15 days) (Comment: incubation period of 14 days, first symptoms can be in 5 days) and

21. Totally employees (except the dispatchers in the control room) work from home.

DSO Strumica gas in their letter dated of 19th of April 2020 as an operator of critical infrastructure has prepared a contingency Plan on DSOs' preventive measures based on good practices in case of pandemic threats, which are the following:

1. Follow main advises from competent authorities;
2. Hygiene;
3. Disinfection of workspace etc;
4. Use of disinfection stations (hand rubbing alcohol);
5. Disinfection by specialized companies;
6. All technicians are divided in teams and shifts;
7. Supply people with protection (mask, sanitizers, gloves etc.);
8. All physical meetings are banded (skype or phone);
9. Coordination with state competent authorities and
10. Coordination with local authorities and ensure their support in case of need as DSOs are critical infrastructure operators.

DSO Kumanovo gas in their letter dated of 16th of April 2020 as an operator of critical infrastructure has prepared a contingency Plan on DSOs' preventive measures based on good practices in case of pandemic threats, which are the following:

1. Follow main advises from competent authorities;
2. Instructions to all employees about personally hygiene / disinfection of workspace etc;
3. Hygiene;
4. Disinfection of workspace etc;
5. Use of disinfection stations (hand rubbing alcohol);
6. All administrative workers may be sent home (work from home);
7. The workstations have to stay at appropriate safety distance;
8. All physical meetings are banded (skype or phone);
9. Avoid movement of people, only in case of urgency;
10. Reduce maintenance and service activities. Focus on urgent works only;
11. Supply people with protection (mask, sanitizers, gloves, etc.);
12. Coordination with local authorities and ensure their support in case of need as DSOs are critical infrastructure operators;
13. Create a back-up team from active technicians. People stay at home isolated and in case of emergency may replace other colleagues;
14. Separate people from each other, if possible, use another room/area;
15. Ensure minimum 1 meter between workspaces;
16. People working in commercial sector may work from home and
17. Totally employees (except the technicians) work from home.

4. OVERALL CONCLUSIONS

The domestic energy production that Macedonian energy sector has forecasted to produce is clearly insufficient to satisfy the increasing consumption of energy, principally in the forms of imported fossil fuels and electricity. As a consequence, we will remain an importer of oil, gas and electricity and thus reliant on imports to satisfy the final energy demand. At present, the level of security of supply is not ideal with further diversification in supply needed; however, we have made significant steps toward addressing these challenges.

As far as natural gas is concerned, gas Interconnection to Greece (PMI), to Republic of Serbia (PECI) and to Kosovo will enhance the Macedonian security supply and will enable establishing further connections to the international gas networks and gas hubs (Southern Corridor, Turkish Stream, LNG terminals, EUSAIR). If these projects are not realised, we will remain in a highly vulnerable position at the moment as far as security of natural gas supply is concerned.

The proposed expansions of the gas distribution network, whilst remaining dependent on a single supplier via a single pipeline will only serve to compromise the security of supply further.

Macedonian gas sector is 100% reliant on gas imports through a single interconnection point from Bulgaria. The new interconnector to Greece, currently in design stage, which will be potentially operational before 2022 may diversify routes and enhance gas to gas competition. Other interconnections with Republic of Serbia and Kosovo have also been proposed.

Currently natural gas contributes to only 7% of the primary energy consumption and average annual utilisation of existing transmission system is low, ranging from 5-15% in the summer season to 50-80% in the winter. Natural gas is mainly used for electricity and heat production(82%), industry(16%) and commercial and public services. Only two municipalities, Kumanovo and Strumica have a distribution network, while there is another distribution system in the industrial zone of "TIRZ", with only ten industrial consumers.

Air pollution, in the form of particulate matter (PM), mainly due to solid and oil fired space heating in households and commercial sector is increasing. Recent data for the period 2004 to 2017 show that during the entire period, population in larger cities has been exposed to PM concentrations in excess of limit values. To this end, the Macedonian Government, assisted by international donors, has put forward an ambitious gasification plan since the early 2010s.

Macedonian institutions have made significant efforts to transpose existing EU laws regarding security of supply into its own legislation so as to adhere to the EU acquis.

As a country we have made considerable efforts to make strategic partnerships but have been slowed down by geopolitical and economic issues outside its control.

Overall Macedonian gas sector looks well placed to meet the expected requirements that have been presented by the adoption of the EU energy acquis.