

Interconnecting Moldova's gas market: the Iasi-Ungheni case

Authors:

Ana Otilia Nuțu, Expert-Forum

Denis Cenușă, Expert-Grup

Peer reviewer:

**Alexandru Săndulescu, former energy policy advisor
to the Prime Minister of Moldova**

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Key messages

- In 2010-2013, after Moldova joined the Energy Community, the government became more committed to diversify gas supplies by interconnecting with Romania, to fully liberalize the market and to integrate in the European energy system. This supported the completion of the Iasi-Ungheni interconnector in August 2014. It cost 26.5 million EUR, of which about 80% was covered by Romania and the EU and the remaining by Moldova. The interconnector's capacity is 1.5 bcm/year, a volume that could fully cover Moldova's consumption needs (without Transnistria). However, the actual volume exported by Romania through the interconnector in 2015 was only 1 million m³, or about 1% of the country's total consumption (without Moldova's Eastern counties).
- To become economically viable, the interconnector needs to be extended with a pipeline to Chisinau. But the extension is crucial also to actually diversify gas sources and routes for Moldova and consolidate the energy security in the country and the region, given that Chisinau consumes about 50-60% of all gas imported in Moldova, and that from Chisinau, gas could be further transported to Ukraine via the existing large capacity pipelines. Finalizing the project is extremely important to limit the unpredictable, politically-driven moves of the regional monopolist Gazprom in the region.
- Moldova must meet several conditions to make the extension of the Iasi-Ungheni interconnector to Chisinau feasible: (i) to fully implement EU's Third Energy Package; (ii) an independent and efficient regulator (ANRE) to ensure full compliance with the requirements for non-discriminatory third party access to transmission and distribution; (iii) to allow the development of domestic demand by diversifying supply, transport and distribution of gas and addressing the historical debt of Moldovagaz; (iv) to minimize the political instability and its consequences for the completion of the project, as it affects EU's willingness to support Moldova with money.
- Romania also needs to invest in its own gas transmission network to increase the export capacity towards Moldova. These works should be carried out in coordination with the construction of the Ungheni - Chisinau gas pipeline.

Executive Summary

The extension of the Iasi-Ungheni pipeline is a major objective for the Moldovan energy sector. Interconnecting Moldova with the gas market in Romania and Europe is the first step to diversify energy sources and routes, which would reduce the monopoly of Moldovagaz and consolidate the country's energy security. Currently, the Iasi-Ungheni interconnector is still much underutilized and can be fully used only by extending the pipeline to Chisinau, where there is the gas demand, and by increasing the transport capacity on the Romanian side.

The project to connect Chisinau to the Iasi-Ungheni interconnector crucially depends on the stabilization of the political situation in Moldova, on political commitment to complete the project, on the effective implementation of the European energy legislation, and on the availability of funding. Moldova's foreign partners condition external financing, including for the energy sector, on the quality of governance and on the actual implementation of reforms. Uncertainties concerning Moldova's will to remain pro-European are a major political and geopolitical risk that could affect the dialogue with Romania and the EU in the energy sector.

The extension of the pipeline will have positive effects only if gas suppliers from Romania can actually enter the Moldovan market and compete with the Russian gas supplied through Moldovagaz. In other words, the project only makes sense if Moldova applies the European energy legislation (the Third Energy Package, the provisions of the Association Agreement with the EU), in particular the effective separation (unbundling) of the transport grids from the suppliers, non-discriminatory third party access to transmission and genuine competition in the energy sector.

A very sensitive aspect of the project concerns its economic sustainability. Although the initial phase (the Iasi-Ungheni interconnector) was mostly a political decision, extending the pipeline to Chisinau (and providing network access of Romanian gas to Ukraine) also enhances the project's economic viability. Major economic constraints concern the relatively small demand in the Moldovan market; the population's inability to pay bills for gas consumption at real market prices¹; and the debts of Moldovagaz to the Russian supplier Gazprom (amounting to 65% of Moldova's GDP in 2014), which could be used any time as a political leverage. External investors and international lenders are reluctant to get involved in Moldova's energy sector because of the political instability, the structural problems in the sector and Gazprom's dominant position.

All these problems have solutions, but to solve them Moldova needs political will. On the upside, addressing the issues would also bring more active involvement of the EU and Romania. EU could become interested in providing more money for the Ungheni-Chisinau pipeline (especially if gas could be supplied also to Ukraine), but only if there are clear guarantees that the pipeline would actually increase energy security in Moldova (and Ukraine). The financing could be supplemented on the "more-for-more" principle of the ENP, conditioning it on effective transposition and full, consistent implementation of the EU legislation, e.g., by strengthening the regulator's (ANRE) real independence. Romania may also contribute know-how for painful reforms in the energy and social safety nets (from the Romanian ANRE and Ministry of Labour), but it can also help through lobbying in European institutions to speed up energy interconnections with Moldova. In the meanwhile, Moldova needs to restructure its energy sector, liberalize the market and implement EU legislation.

¹ The collection rate from households is 100% for electricity and natural gas (according to ANRE). The problem is that regulated prices remain below costs, because prices were not adjusted with the exchange rate MDL / USD. Another problem is that CHPs do not pay, as heat collection rates from households are lower.

1. General description of the gas sector in Moldova

The main factors that led to Moldova's excessive dependence on hydrocarbon imports are the limited availability of own energy resources, which are also not diversified; an obsolete energy infrastructure inherited from the Soviet period; and the connection to the CIS energy system, which is not technically compatible with the EU. The situation in the gas sector is the most complicated. Gas represents 36%² of total energy balance of the country, where Moldovagaz (and, indirectly, the Russian gas producer Gazprom) holds a de facto monopoly on supply, transport and distribution. New players cannot easily enter the market because they lack access to transport and distribution infrastructure connecting the main consumers (CHPs and households).

The gas sector is regulated by the Framework Law 123 on natural gas of 23 December 2009, adopted as Moldova negotiated to become a full member of the Energy Community Treaty³. Following the development of European legislation and requirements of the Energy Community, the law was amended in 2011 and 2014 and is now being revised to transpose the Third Energy Package (Annex 1). The National Energy Regulatory Agency of Moldova (ANRE), which regulates the efficient functioning of the gas market, is not legally subordinated to other public authorities. The members of the Administrative Board of ANRE are appointed by Parliament, which also adopts the annual budget of the Agency. ANRE's regulatory decisions are adopted by the Administrative Board. At least in theory, ANRE should be an independent regulator.

Gazprom's position

The Russian holding Gazprom has a de facto monopoly over the natural gas market in Moldova. It owns 50% (and another 13%, indirectly, through shares controlled by Transnistria) of the shares of the Moldovan-Russian joint stock company Moldovagaz, set up in 1999. Moldovagaz is the founder of the Moldovatransgaz transmission system operator⁴. In addition, Moldovagaz controls about 70% of distribution networks in the country (12 subsidiaries).

Typically, Moldova (excepting Transnistria) contracts about 1 bcm/year of natural gas. Thus, imports in 2014 represented approximately 1.05 bcm/year, and another approximately 2 bcm/year were delivered to Transnistria. The major gas consumers on the Right Bank are the heat and electricity producers - CHPs (43%), households (30%) and industrial consumers (21%). In Transnistria, the main consumer is the Cuciurgan power station, which produces power by "processing" gas. The power is then sold to consumers on the Right Bank. At the same time, Gazprom transports gas through Moldova to Turkey and the Western Balkans (about 20 bcm/year in 2012), which represents almost 11% of Russian gas exports, providing an annual income for Moldovagaz of about 50-60 million USD in 2012⁵.

Moldova buys Russian gas under the supply contract for 2007-2011, signed between Gazprom and Moldovagaz in December 2006. The gas price is referenced to global oil prices for the last 9 months. The considerable decrease in oil prices significantly influences the gas prices, which fell to 252.5 USD/1000 m³ for the period April-July 2015, compared to 382 USD/1000 m³ in 2012. For 2015, ANRE calculated an average price for the imported gas of 260 USD/1000 m³ considering the price of USD 316.77/1000 m³ in Q1, USD 258.79/1000 m³ in Q2, and estimates of USD 214.25/1000 m³ for Q3 and USD 204.93/1000 m³ for Q4 2015. The Russians oppose the negotiation of a new long-term contract and the

² https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/3872267/Enc_IR2015WEB.pdf

³ <http://soros.md/files/publications/documents/studiu%20Securitatea%20energetica%20a%20RM.pdf>

⁴ <http://date.gov.md/ckan/ro/dataset/11736-date-din-registrul-de-stat-al-unitatilor-de-drept-privind-intreprinderile-inregistrate-in-repu/resource/7f2b2df4-3601-4a4d-8fdc-e25a93dbe911>

⁵ Kamil Calus, The Iasi-Ungheni pipeline: a means of achieving energy independence from Russia? Moldova's attempts at gas supply diversification, 2013

gas is currently delivered under the 2006 agreement, updated annually. To negotiate a new contract, Gazprom conditions that Moldova reject the Third Energy Package and in the long term abandon the Energy Community. The Russians also remind of the Moldovagaz' historical debts to Gazprom (USD 4.8 billion, of which 85-90% are from Transnistria), which are allegedly guaranteed by the state, according to a protocol signed with Gazprom in 2006. Though the decline in oil prices leads to very low prices for the gas purchased under the old contract with Gazprom, such gains are temporary and perpetuate the threats to Moldova's energy security. For instance, there is no guarantee that Gazprom could not change even the price formula.

The major structural problem of the gas sector in Moldova thus has two sources. On one hand, the threat that Gazprom will not extend the gas contracts as long as Moldova is willing to fully implement EU rules favouring competition with other gas suppliers from Romania. On the other hand, Moldovan consumers are not able to pay in full, at market prices, for the gas supplied to Moldovagaz. It is important to note that debt for gas reflects also the consumption of electricity produced by the Cuciurgan power plant and the electricity and heat produced in the CHPs in Chisinau, which form the larger share of the historical debt of 4.8 billion USD.

A World Bank study shows that to fully recover costs, electricity prices should increase by 73-113% cumulatively between 2014-2020 and heat prices should increase by 21-80% by 2016 and 30-78% by 2020. This would create many social problems because of the "energy poverty" and the total social assistance expenditures should increase from 0.5% of GDP to 1.9-2.2% of GDP in 2016 and 1.3-1.7% in 2020⁶. As long as debts continue to accumulate, Gazprom has a permanent leverage to stop gas deliveries or possibly even execute the outstanding debt, which would allow it to gain a higher stake in Moldovagaz and in the entire gas system. Meanwhile, Moldovan decision-makers are reluctant to raise energy prices because of the political and socio-economic costs. If prices are not at market levels, gas supplies from Romania cannot be profitable.

Diversification of supply sources

After 2009, Moldova's official vision of the energy sector has changed dramatically. Moldova adopted the Energy Strategy for 2013-2030⁷, which replaced the old strategy for 2007-2020. The new document revises Russia's role in the Moldovan energy sector and emphasizes the need to diversify gas supply by connecting to the Romanian gas grids, by full market liberalization and by the integration of Moldova into the EU energy system. However, the Strategy forecasted that at least until 2015, the Russian Federation would remain the sole gas supplier to Moldova, and the only route being the transit via Ukraine.

The diversification of supply sources was included in the list of Moldova's commitments for the accession to the Energy Community (October 2010). Thus, Moldova has undertaken effective transposition of European energy legislation, including gas, in order to integrate Moldova into the European energy market. Efforts to diversify sources of gas supply increased as Moldova committed to implement the Third Energy Package. The Package requires non-discriminatory third party access to the gas transmission networks, the effective separation (unbundling) of suppliers from producers and grids, the consumers' right to switch suppliers etc. The EU Association Agreement signed in July 2014 also includes legal commitments on diversification of supply. According to art. 76 of the Agreement, Moldova and the EU agree inter alia to cooperate on energy issues and integrate markets and according to Article 77 to collaborate in developing energy infrastructure designed to diversify energy sources, suppliers, and transport routes.

But these commitments to implement the *acquis communautaire* clashes with the interests of Gazprom, which, as mentioned before, may refuse to renew contracts to supply gas and may also require the partial execution of the debt of

⁶ World Bank, Report on District Heating and Electricity Tariff and Affordability Analysis, October 2015

⁷ Moldova's Energy Strategy by 2030

4.8 billion USD, if Moldova implements fully the requirements of the Third Energy Package. As a result, the compromise was that Moldova obtained a derogation by 2020 from Article 9 of Directive 2009/73/EC concerning common rules for the internal market in the gas sector. The article in question requires the unbundling of gas transport and distribution from supply - in fact, this means precisely the separation of the interests of Gazprom from the transmission and distribution networks of Moldovagaz. This is essential: European directives call for the separation of the interests of producers and suppliers from the network operators because, if a supplier can influence a network, it may, in fact, foreclose the market from competing suppliers.

The Iasi-Ungheni interconnector and the need to extend it

Gas supply can be diversified by giving access of Romanian gas on the Moldovan market. This can be achieved through two projects:

1.1. Iasi-Ungheni interconnector. Decided upon in 2010 as a political priority by Moldova, Romania and supported by the EU, the 43 km long pipeline (of which 10.4 km in Moldova) opened in August 2014. The investment amounts to 26.5 million, with 80% the cost covered by Romania and the EU and the remaining by Moldova. The pipeline has a transportation capacity of 1.5 bcm/year, which theoretically could fully cover the consumption needs of Moldova (without Transnistria). However, the project is not yet finalized, as what has been done so far is only the first stage: Romania needs to invest in the reinforcing and extension of the network of Transgaz with two pipelines totalling 163 km and two compressor stations to deliver gas in Moldova at pressures and in quantities that would really count. Moldova, in its turn, needs to extend the pipeline to where there is most of the demand - in Chisinau.

The Moldovan section of the pipeline is managed by Vestmoldtransgaz, a fully state-owned company. The transmission tariff applied by Vestmoldtransgaz was originally established by ANRE in March 2015 amounted to 20.90 MDL/1000 m³, the same as for Moldovagaz, and would be recalculated by ANRE subsequently to a "fairer" value by applying the tariff methodology.

As a result, the Moldovan gas operator Energocom contracted so far only 1 million m³/year of natural gas from OMV Petrom, although initially Romania had expressed its willingness to supply about 50 million m³/year annually. The gas volume contracted is capped by the limited consumption capacity around Ungheni (10,350 consumers, 280 businesses) and because there is no transmission capacity to transfer large volumes of gas from Ungheni to other regions. In addition, the smaller the transported quantities, the higher the transmission tariff of the transport operator Vestmoldtransgaz, which is why OMV Petrom is not even sure whether it would deliver gas to Moldova in 2016. Therefore, increasing the amount of gas purchased from Romania is technically limited and not economically feasible as long as there is no infrastructure to deliver gas from Ungheni to Chisinau, which consumes about 50-60% of all gas imported in Moldova (without Transnistria). Extending the Iasi-Ungheni pipeline is vital to increase the economic viability of the pipeline, but also to diversify sources and routes of gas supply, enhancing the energy security of the country and the region. Moreover, after years of ambiguous policy, in 2015 Romania actually became interested to export natural gas, including to Moldova. In fact, Romania also allocated half of the required amount of investments on the Romanian side to be financed with European money from the Operational Programme Large Infrastructure 2014-2020. Investments in Romania (pipeline Onesti - Gheraiesti, pipeline Gheraiesti - Iasi and compressor stations in Onesti and Gheraiesti) have the advantage of also improving the supply of gas to north-eastern Romania, in addition to the possibility of export to Moldova.

1.2. An alternative for the supply of gas from Romania would be the reverse flow interconnection at Isaccea. This is where the gas transit pipeline Russian Federation-Ukraine-Moldova- Bulgaria enters Romania. The project, which would connect the network of Transgaz with this transit pipeline and investments to ensure reverse flow would be, according to some estimates, cheaper for Romania (the cost is estimated at EUR 65 million when taking into account the

modernization of two compressors and strengthening the network of Transgaz). However, the project faces many problems, both on the Moldovan and Romanian side. In both cases the problems concern possible pressures from Gazprom that the pipeline does not allow access to competitors in the gas market in Moldova, Ukraine and Bulgaria:

- the Romanian Transgaz network today is completely disconnected from the transit pipeline, and the capacity is currently booked for Gazprom, but the pipeline should meet the requirements of the Third Energy Package. Romania is under two infringement⁸ procedures from the European Commission because this pipeline transit does not provide bidirectional access and does not allow other suppliers to access the available capacity, for example, for gas export from Romania to Bulgaria. Two of the three pipeline contracts have "exclusivity" (full capacity is reserved) for Gazprom by the end of 2015 and 2016, respectively, after which there is no reason why this transport capacity, then becoming available, should not be put on the market for competitive access. However, the Romanian government has delayed the project to allow physical interconnection, negotiating since 2012 to postpone infringement procedures and delaying to assess project costs accurately, which would be eligible for European funding.

- In addition to the physical constraints in the Romanian network, in Moldova, the gas imported from Isaccea could be transported to Chisinau only using the existing network of Moldovagaz. Given the difficulty to apply Article 9 of Directive 2009/73/EC in Moldova, but also noting Romania's experience with the access to the transit pipeline on Romanian territory, it is unlikely that Gazprom would not put pressures to restrict the access of the Romanian gas to Moldovagaz' network, e.g., using the pretext of non-existent technical difficulties. There is no guarantee that end-consumers could actually switch suppliers if Gazprom can influence the access to network thereby distorting competition.

- currently, there is little gas available around Isaccea, though the supply in the area would increase with the start of operation of the Black Sea deposits.

- Before entering Moldova, the transit pipeline transits Ukraine, and Ukraine's approach to the ownership of energy assets that cross its territory has been unpredictable. For example, in 2014 Ukraine nationalized the power lines connected with Moldova, including Isaccea - Vulcanesti.

⁸ Transgaz, Development Plan for the National Gas Transmission System 2014 - 2023

Romania's gas network investment plan

Romania's network priorities by 2020 are:

- the three phases of the Bulgaria-Romania-Hungary-Austria pipeline (BRUA). In early 2016, the first phase has secured financing from the EU from Connecting Europe Facility. The second phase will be submitted for the next round of CEF financing. In short, the three phases of the project, to be finalized by 2020, consist of pipelines and compressors that would both allow physical exports to Bulgaria and Hungary and reinforce the national grid. In other words, Romania will have by 2020 the option to export gas to Bulgaria and Hungary.
- the reinforcement of the grid allowing the access of Black Sea deposits to both BRUA and the national market
- the reverse flow connection to the transit pipeline at Isaccea. The Isaccea reverse flow will most likely be used primarily for exports to Bulgaria through the pipeline transiting Romania and now booked by Gazprom, and not for exports to Moldova. The project does not have any clear source of financing (the costs are about 65 million EUR).
- the interconnection with Moldova, consisting of the pipelines and compressors in Northern Romania to allow gas exports through Iasi-Ungheni.

Romania has indeed included the infrastructure investments to finalize the Iasi-Ungheni interconnector on the Romanian side (165 km of pipeline and two compressors, amounting to 110-120 million EUR). The plan is to finance 55 million from EU funds and 55 million from Transgaz (commercial loans, own funds etc). Actually, Transgaz and the Romanian government have actively fought for the inclusion of these investments in the Large Infrastructure Operational Program in 2015. At the same time, Transgaz can access the EU funds for this investment only if they indeed come up with the 55 million EUR cofinancing. Transgaz seems rather interested in getting involved in Moldova, possibly even with a direct investment in Vestmoldtransgaz, as they have expressed in 2015 an interest to do so and the investment on the Romanian territory makes sense only if Vestmoldtransgaz is independent from Gazprom's interests and the Ungheni-Chisinau pipeline is built. Entering the Moldovan market, hopefully with strong institutional backing from the European Commission (plus possibly additional financing), could also help to fight various vested interests in Moldova that would try to block access of Romanian suppliers to the gas networks in Moldova.

In other words, Romania will have by 2020 alternatives to export gas to other countries, such as Hungary or Bulgaria. However, there is real willingness to invest also in the interconnection with Moldova and contribute to improvements in governance on the Moldovan market.

1.3. The Chisinau-Ungheni pipeline will have a length of 117 km and a diameter of 600 mm. In this project, a new GPRS3 station to reduce pressure would be built in Chisinau, which will make it possible to connect directly to the gas distribution network of the city. Also, the pipeline would be connected to the existing pressure reduction stations GPRS1 and GPRS2 through the (half) ring of transmission around Chisinau, and Moldovagaz transmission network would also be connected from GPRS1. Thus, consumers in Chisinau can be supplied directly avoiding Moldovagaz' transmission grid and connecting to the distribution network. At the same time, from the GPRS1 gas can be transported bidirectional to / from Ukraine and possibly to supply gas to Cuciurgan power plant. The project cost estimate is about 92 mil. Euro, which includes 10% contingencies.

Opportunities

- **Existing mutual commitments of the EU and Moldova to cooperate in developing energy infrastructure (interconnectors).** This would allow the diversification of gas supply, as per the Association Agreement (Art. 77).
- **The pipeline Ungheni-Chisinau has the advantage of being managed by Vestmoldtransgaz, a state-owned company that is independent from Moldovatrangaz** and could better ensure non-discriminatory third party access than the current Moldovan network, de facto controlled by Gazprom.
- **Romania has expressed interest in 2015 by allocating 55 million EUR from EU funds (and another 55 million EUR co-financing from Transgaz) for the interconnection with Moldova,** in the Sectoral Operational Programme Large Infrastructure 2014-2020. The amount would cover the investments needed on the Romanian territory to provide gas at full capacity to Moldova.

Challenges

- **The absence of functional gas markets in Moldova,** because Moldovan consumers have limited capacity to pay market prices, but also because Moldovagaz, in which Gazprom has a 50% stake, has a dominant position in the gas market on supply and controls the transmission network and 70% of the distribution network, to which Ungheni-Chisinau must be connected.
- **EIB and EBRD loans would cover about 85% of the cost for Ungheni-Chisinau. The commercial loan could not easily be repaid from tariffs, unless Moldova buys enough Romanian gas.** Gazprom could easily provide gas at substantially lower prices than that of Romanian producers. At the same time, Romanian suppliers would not deliver gas if prices are not competitive, market-based, for gas, electricity and heat produced from gas (the major part of the 4.8 billion USD debt to Gazprom). The return on investment is the classic problem of energy infrastructures built primarily for energy security purposes.
- **Gazprom may threaten to stop gas supplies of gas or to execute part of the debt,** which could reduce the political will to complete the project. At the same time, the regulator ANRE may be subject to direct or indirect pressures. Without an independent ANRE it is impossible to ensure that the pipeline Ungheni-Chisinau would fully comply with the requirement for non-discriminatory third party access. Similarly, ANRE should make sure that the transmission and distribution networks held by Moldovagaz do not pretend to have unjustified "technical restrictions" at the interconnection with the Ungheni-Chisinau that would block suppliers' access access to the market for CHPs, households and companies from Chisinau.

2. Legal and political / geopolitical issues

The Iasi-Ungheni interconnector opened Moldova's access to the natural gas market in the EU, but is insufficient to radically reduce dependence on Russian gas exported via Ukraine. For that, the pipeline must be extended and connected to consumers in Chisinau and from there, through the transmission network to consumers in other regions and to Ukraine. The completion of the project is influenced by political and geopolitical factors. Moreover, the sustainability of this project depends on the proper implementation of EU's Third Energy Package.

Legal issues

Currently, there is a delay in harmonizing the law on natural gas to European requirements, with the deadline January 1, 2015, according to Moldova's commitments to the Energy Community. The mandatory elements of the Third Energy Package on gas were not included in the national legislation but are contained in the draft law on natural gas, approved

by Government Decision no. 776 of 28 October 2015 and submitted to the Parliament on November 3. Authorities blame the delay on the government instability, as the government fell twice during 2015 (June 12 and October 29).

The new Law on Natural Gas provides that all producers have non-discriminatory access to gas transmission and distribution and ANRE must ensure the principle of separation (unbundling) of supply from transport operators. These are crucial for the extension of the Iasi-Ungheni pipeline to Chisinau to ensure that Romanian gas suppliers can actually compete in the Moldovan market. ANRE is responsible that the market players comply; this is why ANRE must remain uninfluenced by political decisions (through the political parties in power) or by other sector players (Moldovagaz). The Energy Community accepted a derogation for Moldova in implementing Directive 2009/73/EC for Article 9 (1) on the separation of transmission systems and operators system until January 2020.

Theoretically, once the new Act comes into force and is effectively implemented, including ensuring an independent regulator and proactive market supervision, the natural gas supplies from Romania could have access without discrimination through transport networks managed by Moldovatransgaz, even if the latter is owned by Moldovagaz. However, the implementation in practice may differ from the text of the law: in every country, regulators may be under pressure from political or from the regulated industry, but so much more in Moldova, under the burden of historic debt and threats of disruption of gas supply by Gazprom.

Political issues

From the political point of view, the governments of Moldova and Romania back the initiative of extending the pipeline and signed a Memorandum of Understanding on May 21, 2015⁹. The document provides for strengthening partnerships in the energy sector, in particular the extension of the pipeline Iasi-Ungheni to Chisinau in Moldova and to Onesti in Romania. The memorandum also creates a mechanism for Moldovan-Romanian cooperation to coordinate projects and attract additional funding from the EU for the Moldovan energy infrastructure to interconnect with the European energy system.

The Ungheni-Iasi interconnector and the extensions in Romania and Moldova were from the beginning a political project rather than an economic one. The political objective is to increase the security of gas supply to Moldova, creating an alternative for the Russian gas. Opening the Romanian market to export to Moldova and Moldova's access to alternative gas to Gazprom does not necessarily mean that Romanian gas will be exported at full pipeline capacity (1.5 bcm/year). Moreover, it is possible that Gazprom would substantially decrease gas prices when faced with competition (this was noted, for example, in Lithuania immediately after the inauguration of the Klaipeda liquefied gas terminal in December 2014). But this is precisely in the benefit of the consumer and it is a consequence of the operation of a competitive market, which is exactly the principle underpinning the European energy market. The EU primarily promotes and funds gas infrastructure that provide a public service - energy security and consumer choice, which justifies more funding through grants and budget allocations.

If Iasi-Ungheni pipeline is not used at full capacity, but only to change the competitive behaviour of Gazprom, the investment in the pipeline cannot be fully recovered through transmission tariffs. This is why a higher financial effort from the EU and Romania is justified, as the proper functioning of the energy market in Moldova and the country's energy security is closely linked to that of both its neighbours in an energy market interconnecting EU and Ukraine.

Precisely for this reason, the pipeline extension requires political will and stable governments in both countries. On the one hand, the Moldovan state actors (ministries, state agencies, local public authorities) must facilitate the initial technical procedures and approvals (completion of the feasibility study and development of technical design). Central

⁹ Memorandum of Understanding between Romania and the Republic of Moldova on projects for the interconnection of gas and electricity networks of Romania and Moldova

and local public authorities must contribute by streamlining the required approvals before financial institutions provide the money, needed to launch the actual construction. On the other hand, governments must mitigate the risks related to the practical implementation of construction projects, based on the costs and technical parameters originally agreed. One must avoid situations like in 2013 when, because the Moldovan government fell, the construction of the Iasi-Ungheni interconnector was delayed by 5 months.

Geopolitical issues

The project diversifies gas sources and routes, which enhances Moldova's energy security and Moldova's integration into the EU energy market. These objectives are part of the Association Agreement and are reflected in the objectives of the Energy Community. However, the construction of the Ungheni-Chisinau section could affect Russia's monopoly on the gas market in Moldova, with serious implications for the Transnistria region and Ukraine.

EU commitments on strengthening Moldova's energy sector are reflected in the Association Agreement (art. 77). At the same time, EU's contribution to enhancing energy independence of countries in the European neighbourhood, and in particular in Moldova, is contained in the revised European Neighbourhood Policy, made public on November 18, 2015¹⁰. Previously, the Eastern Partnership Summit Declaration from Riga in May 2015¹¹ highlighted the importance of interconnections in the process of diversification of supply. An important role in the construction of interconnectors is assigned to the financial mechanism of the Neighbourhood Investment Facility¹², intended to mobilize additional European funds in addition to those allocated by European financial institutions (EBRD, EIB).

The Chisinau-Ungheni pipeline will be linked to the transport (semi)-ring around Chisinau and will have access to major transportation routes to Ukraine. On the one hand, the pipeline will be used to full capacity only to the extent that there would be gas transit to Ukraine, using for this purpose the existing transport network owned by Moldovagaz (see chapter on Economic and financial issues). But on the other hand, connecting with Ukraine would be an alternative route of supply also for Ukraine (given that contracts in Moldova will not cover the full capacity of the pipeline), and would allow consumer access to EU, Moldovan and Ukrainian suppliers in both countries, an idea that is strongly supported by the EU, as it would enhance the energy security of the whole region. For Moldova, connecting with Ukraine means also access to storage facilities, which Moldova does not have. For this to happen, however, ANRE needs to be a strong and effective regulator, able to fully implement non-discriminatory access to the transmission network of Moldovagaz.

Connecting the Iasi-Ungheni gas pipeline to the transmission and distribution concentrated in Chisinau can essentially change the position of Moldovagaz, which is currently the sole supplier that de facto controls the gas market in the country. The extension of the pipeline and increase of volumes of natural gas shipped from Romania, which are yet insignificant (1% of total natural gas consumption in Moldova), are prerequisites to reduce the dependence on imports of Russian gas supplied by Gazprom via Ukraine. The possibility to deliver natural gas from Romania in larger quantities will enhance Moldova's energy security, by reducing the energy dependence of the Right Bank on the Russian Federation and Transnistria, through which the Russian gas is supplied and from where the Right Bank purchases electricity produced from subsidized (or unpaid) Russian gas. However, regardless of the evolution of relations between the Russian Federation and Ukraine, the Moldovan consumers, households and industry will benefit from an alternative gas supply that is both safe and predictable.

The fact that the Chisinau-Ungheni pipeline will be managed by an independent transmission operator, Vestmoldtransgaz, which is fully owned by the Moldovan government, provides additional security that this pipeline

¹⁰ European Commission, Review of the European Neighbourhood Policy (ENP): stronger partnerships for a stronger neighbourhood, November 2015

¹¹ Eastern Partnership summit, Riga, May 2015

¹² Neighbourhood Investment Facility, http://www.enpi-info.eu/mainmed.php?id=321&id_type=10

would not be influenced by the interests of Gazprom. Even if the new legislation complies in theory with the European rules on unbundling and non-discriminatory third party access, EU imposed the condition that the interconnector Iasi-Ungheni and the future pipeline Ungheni-Chisinau be managed by an entirely separate company. This indicates that Europeans do not fully trust in the ability of the regulator ANRE to withstand some pressures concerning the access of suppliers to networks. Strengthening the regulator is even more important if one takes into account the use of the network of Moldovagaz to transport gas to Ukraine.

At the same time, extending the pipeline and diversification of gas sources and routes may face Gazprom's strong opposition, which could pressure Moldovagaz with the threat of the historical debt of about 5 billion USD, of which about 85-90% is in the Transnistria region (SA Tiraspoltransgaz). In exchange for the huge debt for gas to Gazprom, the Russian side could gain control over the energy infrastructure, which is now owned only 50% by the Moldovan state and could influence the Moldovan decision-makers and the regulator, including trying to control the new pipeline. While extending the pipeline creates new alternative supply, as long as national legislation does not ensure a liberalized market, Gazprom will remain an influential actor in the sector with diversified levers of influence on Moldova. Precisely for this reason, the EU (and Romania) should support and strengthen the Moldovan institutions to protect them from political interference, possibly providing more money in exchange for conditionality relating to the firm implementation in practice of the Third Energy Package.

Opportunities

- **The new Law on Natural Gas transposes the Third Energy Package - with the crucial exemption by 2020** for Art. 9 (concerning the separation of transport ownership from supply and distribution) from the Directive 2009/73/EC on common rules for the internal market in natural gas. The new law supports access to transmission and distribution networks for the natural gas from Romania, once the pipeline reaches Chisinau. However, support from the EU and Romania is needed to back the Moldovan institutions against any pressure from the Russian holding Gazprom.
- **Extending the Iasi-Ungheni pipeline to Chisinau creates the prerequisites for minimizing the influence of Gazprom on the Moldovan gas market**, as consumers can have access to safe sources of natural gas, delivered by predictable actors (Romanian suppliers), regardless of the political decisions of the Russian Federation or changes in the Russian-Ukrainian relations.

Challenges

- **Failure and / or inadequate implementation of the new law on gas (for example, de facto restricting access to the network, without being penalized adequately by a weak regulator)** could create obstacles for providers who deliver gas through the extended Iasi-Ungheni pipeline if it is not directly connected to large consumers or if it is connected to networks that do not play by the rules. The absence of guarantees that natural gas can be delivered in Romania by the national transmission system (operated by Moldovatransgaz) creates uncertainty among actors who intend to allocate financial assistance (EU), jeopardizing the sustainability of the Iasi-Ungheni pipeline.
- **In the long term, even the extension to Chisinau may become the target of attempts to be taken over or influenced by Gazprom** in exchange for arrears of Moldovagaz (about 65% of GDP for 2014), of which 85-90% belong to Transnistria region. Given this amount, the accumulated debts probably exceed the present value of the entire network of Moldovagaz and repayment would require strong political will and painful measures that would burden Moldovan taxpayers for several years. It is very possible that Gazprom would threaten Moldovan authorities with the debt execution if Moldovagaz allows access to its network for significant amounts of Romanian gas transported through Ungheni-Chisinau or even ask for shares in the new pipeline, if the government is willing to yield to pressure.

- **Changes in the foreign policy and fragmentation of the dialogue with Romania and the EU, particularly on energy, may lead to blockages in the project.**

Gas market interconnections need electricity interconnections

Moldova depends 100% on Russian gas and 80% on electricity from Cuciurgan power plant in Trans-Dniester, controlled de facto by Russia. Energy policy decisions in Moldova could be influenced by threats to stop supplies both of gas and electricity. As explained below, Cuciurgan imports gas, produces electricity which it sells at prices 30% above electricity prices in Romania, but does not pay for the gas, increasing Moldova's total debt to Gazprom. In other words, Cuciurgan (and the intermediaries through which it sells electricity to the Right Bank) may easily abuse their quasi-monopoly on the electricity market while deepening Moldova's dependence on Gazprom. This is a vicious cycle that must be broken.

The only solution is to provide at the same time alternatives both for gas and for electricity. As the present report shows, the solution for gas is the completion of the Onesti-Gheraiesti-Iasi-Ungheni-Chisinau pipeline. On electricity, there is a long-term solution and a medium-term one. In the long term (15 years), Moldova must be fully coupled with the European electricity network ENTSO-E, which requires synchronous connection and a major overhaul of Moldova's electricity system. But there is a short term solution (3 years) to substantially increase the possibility to import electricity from Romania, from the 150 MW currently to 650-800 MW (the Right Bank's peak consumption is some 1000 MW). The cheapest solution is to build the following infrastructure:

- asynchronous interconnection Isaccea-Vulcanesti-Chisinau with a back-to-back station and a possible 110 kV connection to Comrat. This southern branch would also relieve Romania's excess production in Dobrogea area, where wind and nuclear energy production is concentrated. Total investment is 140 million EUR, mostly in Moldova.
- asynchronous interconnection Suceava-Balti with a back-to-back station in Balti. Part of the needed infrastructure is already built in Romania. The total investment is 132 million EUR, of which 63 million EUR in Moldova.

The best part is that the gap between electricity prices from Cuciurgan (62 EUR/MWh) and Romanian wholesale market (40-45 EUR/MWh) could allow the recovery of the investment. However, EU support and involvement from Transelectrica are badly needed to stimulate the Moldovan decision-makers.

3. Economic and financial aspects

The Ungheni-Chisinau gas pipeline extension costs about EUR 80-100 million for the actual construction of the pipeline (117 km) and a possible further EUR 20 million for the installation of compressor stations, without which natural gas delivered to Romania cannot be pumped further from Ungheni to Chisinau if Romania does not ensure the pressure of 45 bars at the border as committed to in the Memorandum. According to current commitments, the EU is ready to allocate EUR 10 million, provided that the Moldovan authorities will take loans from European financial institutions (EBRD, EIB) to cover construction costs (over 80 million EUR). In turn, Romania must also make investments so that the pipe can supply gas to Chisinau at the full capacity of 1.5 bcm/year. Investments on the Romanian side mean the construction of two sections of pipeline of about 160 km and two compressor stations, a project estimated at least 110 million EUR, which is funded from EU sources (55 million) and Transgaz cofinancing (55 million) in the Large Infrastructure Operational Programme 2014-2020.

The cost of the Ungheni-Chisinau project has increased because of the changes in the project design: in the pre-feasibility study, the pipe was 500 mm in diameter and costs were estimated at 83.72 million EUR, whereas in the feasibility study the capacity of the pipeline has been increased (pipeline diameter of 600 mm) and estimated costs are approximately EUR 92 million. At the end of 2015, the technical and financial feasibility study was completed, and the environmental study was to be finalized in January 2016. The high variation in the estimated cost of +/- 40% are because even the pipeline route could easily be changed or would require additional environmental investment in protected areas, and this will be known with certainty until after the environmental and social impact assessment (ESIA) and the completion of the consultation period of 120 days.

Two alternatives were considered for the execution of the project:

- a consultant prepares the technical project and proposes technically neutral solutions; the construction is then put to tender, based on the technical project prepared by the consultant (typical "Red FIDIC" procurement). The amount of MDL 300 million (approx EUR 14 million) allocated initially for the 2016 budget and cancelled from the budget in late 2015 would have been for this consultant. The amount was reallocated because of the budget deficit and the fact that there are delays in the project; the consultant could be hired in the spring of 2016 at the earliest, after the completion of the feasibility study and the ESIA process.
- the second option is a design-build contract (Yellow FIDIC): a company is contracted for the detailed technical design and then for the actual construction. For this, if the project starts in 2016, the related amounts should be budgeted.

One of the thorniest issues is how to fund the pipeline. By current rules, the EU can finance up to 1/7 of costs, under a program of budgetary support granted to Moldova, which is currently blocked because of the political and economic crisis in Moldova. The remaining project funding would come from a (quasi-) commercial loan from EIB and EBRD, fully guaranteed by the state.

In the case of commercial loans, the biggest problem is that these loans have to be repaid (e.g. from tariffs). As the transport tariff is per unit of gas transported, if small amounts of gas are transported through the pipe, the price can be prohibitive - for example, if Gazprom will provide gas at far better prices than suppliers of gas from Romania, and that gas is transported through the pipelines of Moldovagaz. This is exactly what happens today: at the end of 2015, OMV Petrom had not concluded with Energoatom a new contract to supply gas to Moldova for 2016 because the transport tariffs had quadrupled from last year and Gazprom offers a competitive price.

As the benefit of the pipeline consists of a public service (energy security, alternatives for Moldovan consumers), the costs should be "socialized". This can be done, for example, through a public fund for energy security covering the transport tariff difference between Moldovagaz and Vestmodtransgaz, so that gas from all sources can compete effectively; or through a greater support with grants from the EU, if the EU believes that energy security of Moldova (and Ukraine) is of European public interest.

On the other hand, suppliers will deliver only if consumers have the ability to pay. Currently, Moldova's debt to Gazprom above derives mainly from the following sources:

- consumption of the two CHPs in Chisinau for which tariffs for heat and electricity are below the gas costs, the delays in adjusting tariffs having increased their debt to Gazprom to 700-800 million USD accumulated since 2006. The consumption of the CHPs and households on the Right Bank amounts to about 1 bcm/year. For all sources of energy (electricity, gas, heat), regulated consumer tariffs are below cost, the difference effectively building up the annual growth of debt to Gazprom. More specifically, although these tariffs are set at cost-recovery levels in MDL, they rapidly get below the costs because tariffs are not timely adjusted to the frequent devaluations of the national currency against the USD. About 60-75% of the cost of natural gas and electricity consists of the value of imports in USD. There is a World Bank project to restructure of the district heating system, but this requires tough measures consisting of tariff increases and adjustments of the social protection system, difficult to implement particularly because of government instability.
- Transnistria, where the industry is de facto controlled by Russian investors or directly by Gazprom, consumes about 2 bcm/year and does not pay at all the gas bills to Gazprom, as shown in the reported debt of nearly 5 billion USD in 2015. But while the Cuciurgan power (consuming 1 bcm/year) produces 80% of the electricity consumed on the Right Bank, which it delivers through an intermediary, Energokapital¹³. Given that gas is not paid, the price of electricity delivered to Moldovan suppliers (6.795 US cents per kWh) exceeds the cost of "gas processing" (1.8 US cents per kWh), which means that the gap (5 cents per kWh, or USD 160 million per year, at a production of 3.2 TWh) could be siphoned off through the intermediary Energokapital. From this difference, natural gas used for electricity generation should be paid, but the continued growth of the debt to Gazprom raises questions about the extent to which such payment is made. Moldova's dependence on Gazprom is thus increased by the fact that although Moldovan suppliers of electricity pay for energy purchased wholesale prices higher than those prevailing in the European Union, they seem not to cover the production costs or probably fuel consumed is not paid in full. The contract with Energokapital should be investigated especially considering that this is practically a monopoly for all electricity consumers in Moldova and therefore should be fully regulated with full transparency on procurement and cost components, which is difficult because both Energokapital and Cuciurgan are located and incorporated in Transnistria.
- In other words, the Moldovan market opening to suppliers in Romania will be possible only to the extent that consumers are willing to pay on time and at market prices. Even if it is currently expected that the first contracts for long-term supply would be concluded by suppliers and producers in Romania with the state company Energocom, the prices the customers of Energocom will pay, be they state-owned or private, should be at market levels and adjusted periodically at the exchange rate Moldovan leu / USD.

Very importantly, European rules, also transposed in the Moldovan legislation, do not allow a consumer who has debts to switch suppliers. As a result, the power plants and other consumers on the Right Bank will not be able to change their supplier until they pay the historical debt. These are the most important consumers in the Moldovan market that Romanian suppliers would be interested in. Also, regulated prices are below cost and liberalization could lead to

¹³ Sergiu Tofilat, expert

increases in the first phase, at least until a real competition develops with gas suppliers in Romania. All this can significantly affect the viability of the Ungheni-Chisinau project.

One issue not discussed transparently and clearly it is that, at this time, Ungheni-Chisinau pipeline capacity of 1.5 bcm is purely theoretical. This capacity is calculated taking into account the maximum flow throughout the year of 175,000 m³ / day. But consumption is variable, during winter larger quantities are needed (up to 240,000 m³ / day), while summer consumption is almost zero, and Moldova has practically no storage capacity to import at constant levels and store gas during summer to cover the peak demand in winter. In reality, even if the Ungheni-Chisinau pipeline is built, the quantities could reach a maximum of 700 million m³, meaning just half of the full capacity of the pipeline. This would cover 60% of Moldova's consumption. The maximum capacity can be achieved only if the gas imported by Moldova in Chisinau would be transported through the network of Moldovatrangaz to Ukraine through the major pipelines in northern Moldova (see map in Annexes). The capacity of those pipelines is 30-40% higher than that of the Ungheni-Chisinau pipeline and most likely they have available capacity. In short, Moldova could import at full capacity throughout the year, could transit gas to Ukraine during the summer for storage and could transit the gas back to Chisinau in winter, which would allow the use of the pipeline to the maximum capacity and reduce transport tariffs per unit. Also, using the major pipelines of Moldovatrangaz with non-discriminatory access, suppliers from Ukraine could enter the Moldovan market, and reversely, Moldovan suppliers could enter the Ukrainian gas market.

This could be done if Ukraine is interested to offer storage capacity, competitively, to suppliers in Moldova; and if ANRE can effectively ensure that Moldovagaz would not claim that the major pipelines to Ukraine have no available capacity, which should be allocated on a non-discriminatory and competitive basis. Here the EU can assist primarily with institutional support and smartly designed conditionality to ensure that the Third Energy Package is fully transposed in Moldova and Ukraine. This is a further argument for the EU to contribute financially to the Chisinau-Ungheni pipeline because it would diversify the sources and routes of supply for both Moldova and Ukraine.

The commercial aspects for gas transport to Chisinau were considered in the feasibility study. There are two options to recover investment through transport tariffs, if consumption would be 600 million m³ / year or 360 million m³ / year. In both alternatives, the project could recover its initial investment in two ways:

- the state, through Energocom, could conclude a long-term contract for gas supplies for all public buildings (town halls, schools, hospitals etc) plus the two CHPs in Chisinau (now Termoelectrica), their consumption being about 360 million m³ / year.
- investment could be "socialized", based on the argument that the pipeline ensures diversity of supply, a public service that can be paid through a tax on security of supply. A tax on energy consumption would be levied on all imported energy products (electricity, gas, petrol), collected in a special fund to repay the debt. A similar mechanism was used for the liquefied gas terminal at Klaipeda (Lithuania), whose benefit was the reduction of gas prices from Gazprom because of the competition with liquefied gas. The feasibility study estimates that such a tax would increase the prices for all energy products by about 2%.

From discussions with experts in the sector, there is a third option, which was not discussed in the feasibility study, though it could also resolve the issues of managing the pipeline. In this alternative, the state budget would finance the pipeline and would concession it to an operator (Vestmoldtransgaz) in exchange for a royalty by which to recover the investment. The payback and therefore the royalty level may be set according to the state policy on the use of the pipeline.

Another option would be to attract potential investors from Romania: for instance, Transgaz could contribute capital to Vestmoldtransgaz, covering part of the costs of the pipeline. One could also look into the possibility that Petrom and Romgaz could contribute capital to the pipeline, to the extent that this would not violate the principle of unbundling and

third party access (e.g. a producer and supplier of gas from one country could contribute with capital in networks in other country, provided that they do not set up suppliers there).

Opportunities

- **The construction of the pipeline Ungheni-Chisinau requires deep reforms in the gas sector in Moldova:** energy tariff reforms, reform of the state companies who do not pay, social security reform. All these reforms are possible even if they are very demanding.
- **Powerful actors could be found to support financially the interconnection and have a strong interest that energy sector reforms be implemented in Moldova.** Transgaz sent a letter of intent to become a shareholder in Vestmoldtransgaz, which would mean not only a capital increase that would reduce the EBRD-EIB loan, but also a strong interest in keeping in check the vested interests of Gazprom to control the gas market in Moldova. The European Union could be persuaded to support an additional grant for interconnection if they see interest from the Moldovan authorities to use Moldovatrangaz network and open the market also to Ukraine.
- **A solution for tariff reform, coupled with a system of social protection against "energy poverty" could look as follows:** (i) adjusting the price of gas, electricity and heat; (ii) at the same time, revising transmission and distribution tariffs, thus eliminating unjustified amounts, such as:
 - "the Furdui Amendment" - from 2014 to October 2015, Moldovans paid a transit tariff for gas exported from the Russian Federation to Romania and Bulgaria. This tariff has been removed now by an amendment to the law, instead of by appeal to the Constitutional Court which would have allowed the recovery of amounts from the past, about MDL 320 million / year supported by Moldovan consumers.
 - The excessive distribution or transport tariffs should be reviewed to eliminate investments that should not have been recognized or reviewing the "technological consumption", which was overestimated in some years by at least 4 times¹⁴ or Moldovagaz investment expenditure that ANRE has considered unjustified. In October 2015, the Moldovan prosecutors initiated investigations on the fraud schemes, accusing Moldovagaz for having performed illegal deliveries of natural gas to certain economic entities from Moldova, subsequently reported as "technological consumption" , and paid in the end by all consumers.
 - A correct and complete investigation of prices and tariffs for gas and electricity contracts to reduce any amounts spent on unnecessary or non-transparent or even dubious transactions, for instance the contract through Energokapital.
 - "Entry-exit" tariffs must be introduced as soon as possible, and the transit of gas from Vestmoldtransgaz to Moldovatrangaz networks and vice versa should be free of charge, to avoid duplication of tariffs ("tariff pancaking").
- **Adjusting the social protection system by:**
 - **Increasing the budget spending for social protection as recommended by the World Bank**, which would mean additional expenditure of 2.3 billion MDL in 2016 - 3 billion MDL in 2020. A portion of these expenses could be covered by reducing the amounts wasted in unjustified tariffs and corruption as mentioned above.
 - **The definition of vulnerable consumers of natural gas and electricity**, in accordance with EU best practices and creating targeted support mechanisms.
 - **Raising consumer awareness** that the system of "social protection" through tariffs below costs and by defaulting on payments increases the dependence on Gazprom and is socially unfair: low prices benefit the people consuming more, who usually are wealthier than vulnerable consumers.

¹⁴ <http://hotnews.md/articles/view.hot?id=8106>

Challenges

- **Difficulties to implement substantial reforms in the energy sector under government instability and lack of political will**, especially given that reforms would include higher prices and tariffs, at least in a first phase. Such a reform would require external financial support (EU), accompanied by targeted and credible conditionality.

4. Technical and infrastructure issues

The Ungheni-Chisinau project is more complex than other construction projects executed so far in Moldova and requires the application of new rules, such as the new legislation on social and environmental impact (ESIA) which entered into force on 1 January 2015. The full implementation of the new ESIA regulations, which set clear deadlines for public consultations, and the technical difficulties of the procedure have delayed the project by about six months.

Under the current feasibility study, in which the technical and economic sections were finalized in November 2015, the pipeline route crosses protected areas, which requires additional approvals from the Environment Ministry, and risk management or mitigation measures that may change (increase) the expenditure estimates. Although some procedures to obtain construction permits were simplified for this particular project, particularly the construction permits, urban certificates and technical book, and the pipeline construction does not require expropriations, there are delays because of small misunderstandings or miscommunication between institutions (Ministry of Environment, Ministry of Regional Development and Construction, Ministry of Economy, local authorities in Moldova). At the moment, construction is expected to begin in the second half of 2016 in the most optimistic scenario and the project realistically could be completed as early as mid-2018.

In terms of connections, the Ungheni-Chisinau pipeline would be connected directly to the main gas distribution of Chisinau by a new station to reduce pressure and to the transportation ring around Chisinau, namely to the transmission network owned by Moldovagaz. According to experts, there is no technical reason why the Chisinau-Ungheni pipeline, once completed, could not be physically connected to the existing transmission and distribution networks, so that Romanian gas could reach final consumers. It is equally essential that the gas transported through the pipeline Ungheni-Chisinau would also have access without restriction to the major pipelines in the North towards Ukraine, which certainly have available capacity. In other words, it will really be a test of ANRE's independence if Moldovagaz will try to prevent the access to its own pipeline, with the pretext of various technical problems not allowing interoperability.

By the completion of the project, the Romanian gas market will experience significant changes, particularly the substantial reduction in gas demand due to the exit from the market of the fertilizer producer Interagro, which in previous years consumed about 20% of the total Romanian gas consumption. Now, Romanian gas producers are faced with the prospect of oversupply (gas extraction is quite inflexible and storage is highly regulated), which could lead to lower wholesale gas market prices. As a result, gas producers openly advocate to Romanian authorities to speed up the interconnections of the gas market and accelerate investments. Similarly, the public opposition to the physical export of gas is lower than in previous years. This is because Romania does not currently import substantial gas quantities from Gazprom, which reduces the public concerns of "energy dependence on Russia" and because the market was already liberalized without any major shocks. Meanwhile, in the Black Sea, Petrom and Exxon found reserves estimated at 42-84 bcm and Lukoil, Romgaz and PanAtlantic announced a discovery of over 30 bcm, which would speed up interconnections and the strengthening of the Romanian gas network (including the system pressure of 12 bars compared to neighboring countries like Moldova which operate at pressures of 45-55 bar). Precisely because of proximity the reserves in the Black

Sea would be more easily accessible to Moldova. Interconnection projects with Moldova (Iasi-Ungheni and Isaccea) require similar investments in the network of Transgaz to ensure sufficient pressure for delivery to Moldova. The final preference for the Iasi-Ungheni pipeline extension on the Romanian side is advantageous for the Romanian gas system (investment on the Romanian Transgaz system also strengthens the northern network in Romania). As a result, it is a high enough probability that these investments would be made on the Romanian side to open the market for export, which would include the option to export to Moldova, even if by 2020 Romania will have also the alternative to physically export gas to Bulgaria and Ukraine.

Opportunities

- **The pipeline Ungheni Chisinau offers the opportunity for institutions and ministries to enhance their capacity to implement complex projects in the future**, such as electricity interconnections with Romania
- **The Ungheni-Chisinau pipeline could also deliver gas to Ukraine**, using the existing network of Moldovatrangaz, which would allow access to additional capacity storage that Moldova does not have, and would open the Moldovan market also to suppliers from Ukraine (and vice versa).
- **Romania has changed its position on the export of gas**, with Interagro's exit from the system and the discovery of deposits in the Black Sea.

Challenges

- **Insufficient capacity of the regulator ANRE to face any pressures or any technical pretexts** that would limit non-discriminatory third party access to networks of Moldovagaz.
- **Poor preparation of human resources for the implementation of European standards** in construction related to natural gas infrastructure, the current use of GOST standards.

Recommendations

To complete the entire project Onesti-Gheraiesti-Iasi-Chisinau-Ungheni needs an enhanced dialogue and coordination among Romania-Moldova-EU. This can be achieved by increasing the role and frequency of the current committee meetings EC-RO-MD-IFIs. In this formula, the parties could help complete the project on the Moldovan side as follows:

European Union

- Conditioning the additional funding under the "more-for-more" principle in the recently revised European Neighbourhood Policy. In a first phase, the EU could increase 10 million to 1/7 of the revised cost of the project, which is now estimated at over 90 million.
- Provide funding on the following conditionality:
 - institutional empowerment and de facto independence of the regulator ANRE
 - energy sector reform, tariffs, targeted social assistance for disadvantaged/vulnerable consumers
 - ensuring the financial sustainability of gas consumers in the public sector - CHPs
 - monitoring the independence of Vestmoldtransgaz
 - anti-corruption reforms in the energy sector.
- the financial assistance should be granted in instalments, with firm, monitorable benchmarks and releasing the instalments only after these benchmarks are met. At the same time, it is critical to increase the public "buy-in" of reforms (proper communication with the public, advocacy). In Romania, the gas market was finally liberalized and decision-makers openly opted to invest in infrastructure for physical exports only when the public "bought in" the reforms, understanding the gains of liberalization and reducing opposition.

Romania

- Support project through the acceleration of the investments on the Romanian side, on both gas and electricity infrastructure.
- Provide institutional support (transfer of know-how to ANRE and social protection schemes for energy), given that Romania has recently faced the same problems and has just begun to seriously address them.
- Support at regional level for Moldova to be de facto included in the CESEC¹⁵ group, which promotes EU gas interconnection priorities for South-Eastern Europe. Although Moldova is in theory already affiliated to CESEC, it has not signed the official memorandum of Dubrovnik in July 2015, the document that actually gives "substance" to the group.
- Advocacy at the European institutions to support Moldova's energy independence, interconnection projects and strengthening of the institutions.

¹⁵ A high-level working group, Central and South Eastern Europe Gas Connectivity, which examines and selects interconnection priorities in the regional gas market to diversify gas sources and routes. The purpose of the group is to facilitate the completion of cross-border projects that require coordination between several countries and need to apply harmonized rules.

- Stimulate interest from Romanian companies (Transgaz) to participate in Vestmoldtransgaz with capital contributions, which would be backed by the support of the Commission to ensure that the pipeline will not be influenced by Gazprom or by various vested interests in Moldova.

Moldova

- Restructure the energy sector in the medium and long term, and the elimination of "soft budget constraints" (non-payments) in the public sector.
- Strengthen the independence and institutional capacity of ANRE.
- Review transport tariffs and introduce "entry-exit" tariffs for the natural gas networks.
- Promote the implementation of unpopular reforms related to the Third Energy Package (effective unbundling of the producers and suppliers from transport and distribution networks).
- Fight corruption in the sector and promote market liberalization with the aim of identifying additional financial resources to strengthen the energy sector.
- Appoint a "champion" (motivated coordinator) to supervise the projects on interconnectors / diversification of energy supply, within the Ministry of Economy, responsible to monitor and evaluate these projects, including electricity.



Annexes

Annex 1. Third Energy Package - transposition in Moldova

REGULATION (EC) No 714/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity - deadline January 1, 2015

COMMISSION REGULATION (EU) No 838/2010 of 23 September 2010 on laying down guidelines relating to the inter-transmission system operator compensation mechanism and a common regulatory approach to transmission charging - deadline January 1, 2014

REGULATION (EC) No 715/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 on conditions for access to the natural gas transmission networks - deadline January 1, 2015

DIRECTIVE 2009/72/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 concerning common rules for the internal market in electricity - deadline January 1, 2015

DIRECTIVE 2009/73/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 concerning common rules for the internal market in natural gas - deadline January 1, 2015

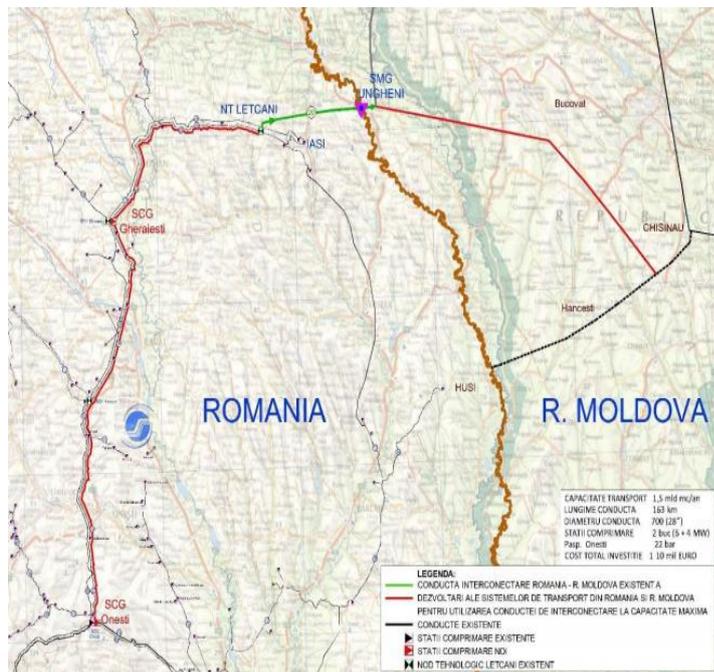
Source: Energy Community

Annex 2. Gas data on Moldova

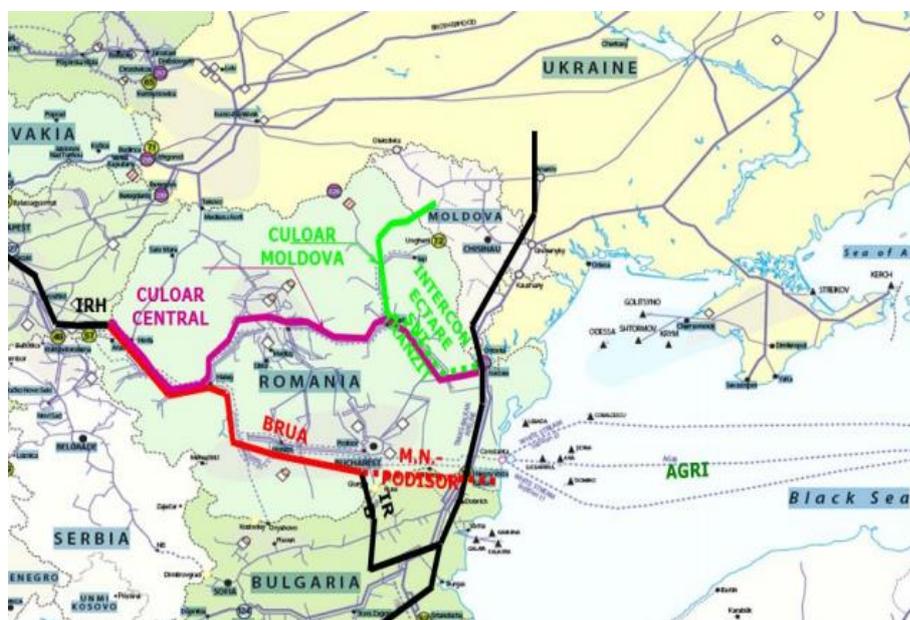
		2011	2012	2013	2014
Volume of gas purchased	Bcm/year	1152.1	1.0955	1.0312	1.0531
	Mil MDL	4614	5185	4922.2	5658.7
Volume supplied to consumers	Million m3/year	1036.3	989.6	945.3	959
	Mil MDL	5327.2	5942.6	5786.7	5867.3
Household consumption	Million m3/year	313.9	298.9	278.1	277.1
	Mil MDL	1739.9	1942.8	1839.4	1832.6
	Share in total consumption (%)	-	-	29.4	28.9
Consumption in public buildings	Million m3/year	52.7	50.3	42.4	42.7
	Mil MDL	295.6	321.8	275.5	277.1
	Share in total consumption (%)	-	-	4.5	4.4
Consumption in the energy sector	Million m3/year	430.8	428.9	393.5	396.9
	Mil MDL	2019.1	2380.5	2225.1	2245.1
	Share in total consumption (%)	-	-	41.6	41.4
Consumption - other companies	Million m3/year	238.9	211.5	231.4	242.3
	Mil MDL	1272.6	1297.6	1446.7	1512.6
	Share in total consumption (%)	-	-	24.5	25.3
Total collections	Mil MDL	5143.8	5637	5559.3	5194.5
Collections from households	Mil MDL	1755.4	1860.8	1879.5	1765.7
Collections from public buildings	Mil MDL	285.6	317	287.8	257.2
Collections from energy sector	Mil MDL	1906.3	2227.1	1958.8	1777.6
Collections - other companies	Mil MDL	1196.5	1232.1	1433.2	1394.1
Collection rates for gas	(%)	96.6	94.9	96.1	88.5
Payments to Gazprom	(%)	90.4	81.9	90	-

Source: ANRE, authors calculations (no data on Transnistria)

Annex 3 Gas pipelines in Moldova¹⁶



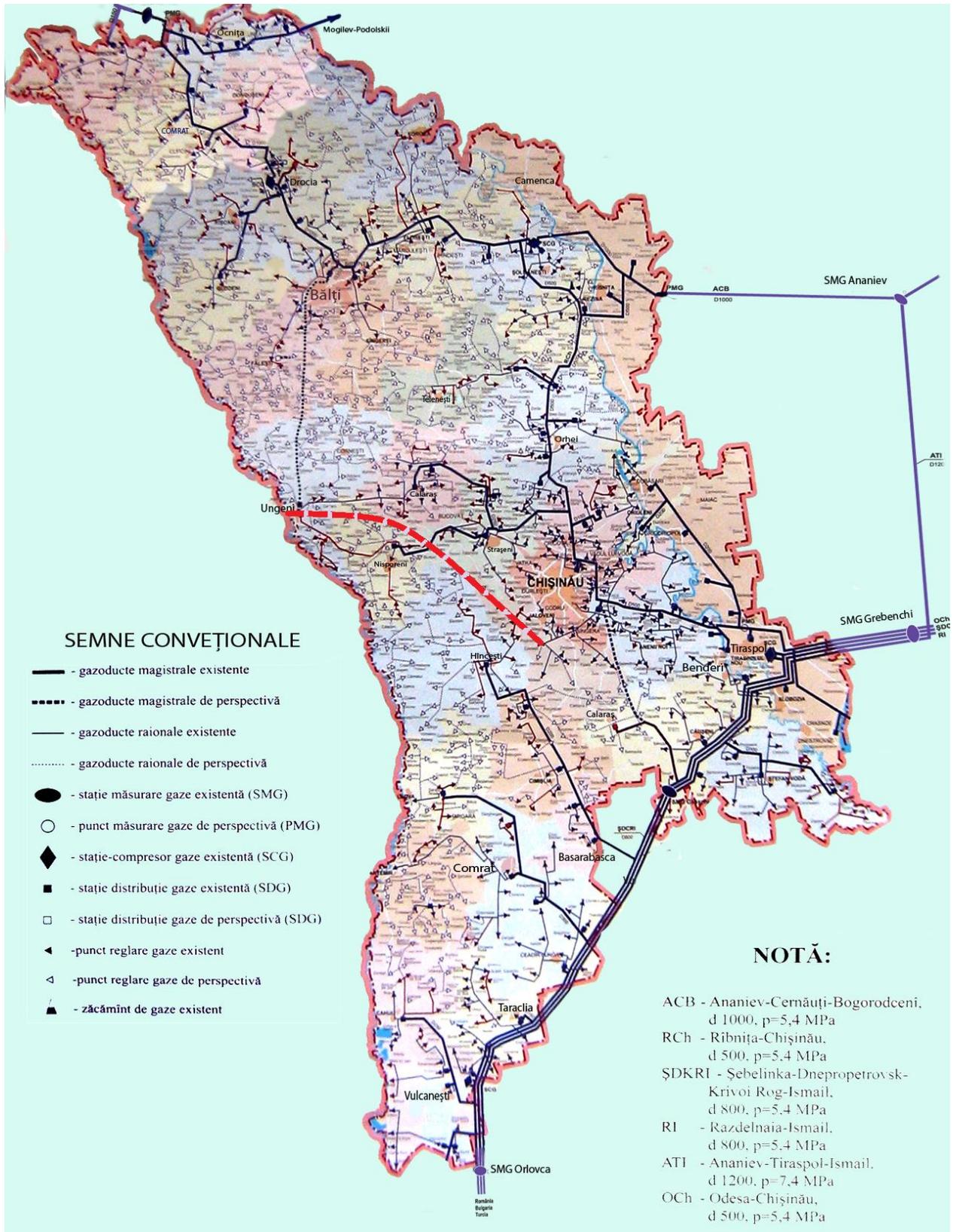
Source: Transgaz, 2016



Source: Transgaz, 2016

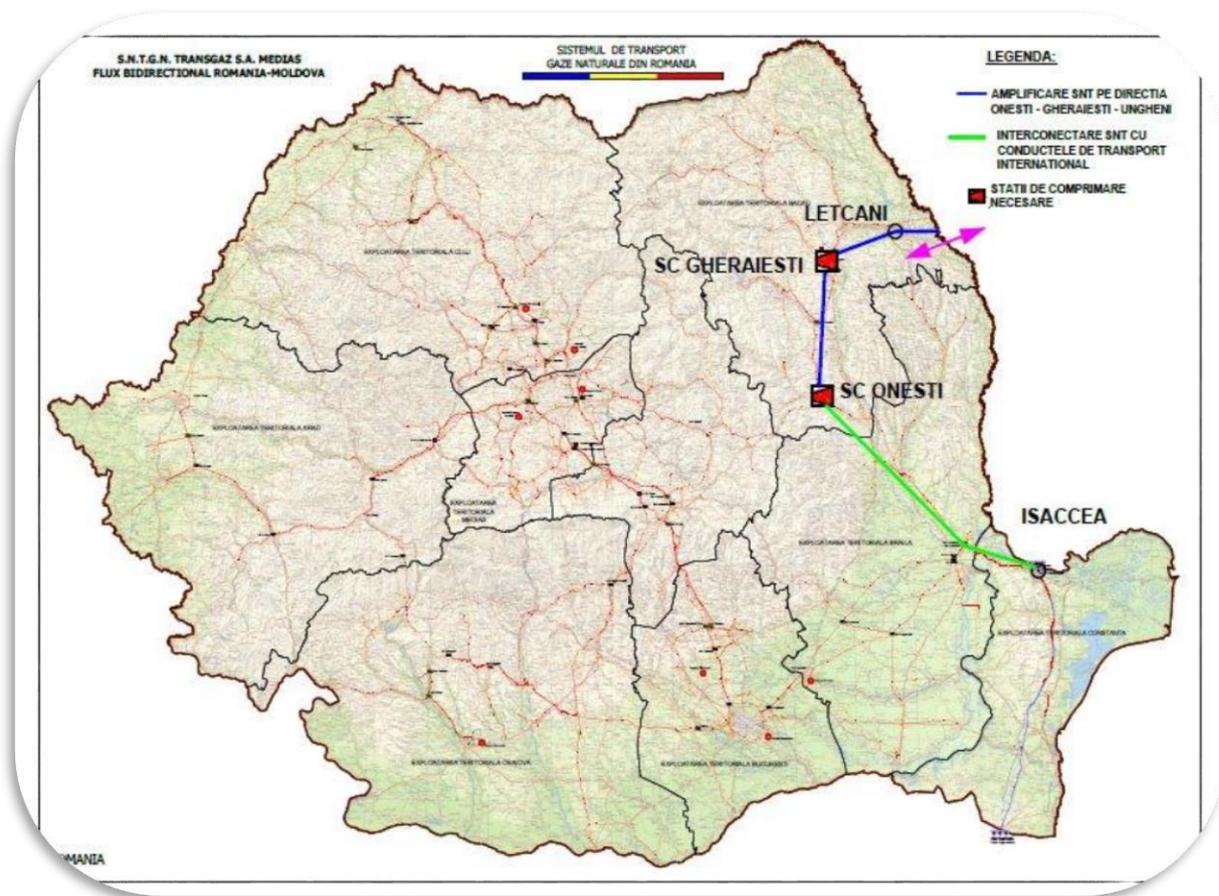
¹⁶ Moldova is transited by two pipes connected from Ukraine: 1) Ananiev-Cernăuți-Bogorodciani - 8,72 bcm/year (North); 2) Șebelince-Dnepropetrovsk-Krivoi Rog-Ismail - 15,80 bcm/year, and Ananiev-Tiraspol-Ismail - 20 bcm/year (South), <http://www.timpul.md/articol/lungul-drum-al-gazului-romanesc-spre-chiinau-82315.html>

Annex 4 Moldova gas map



Source: Energy Strategy 2007

Annex 5 Romania's plans on interconnecting Moldova on gas



Source: Transgaz, 2016