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Report on the findings of the Baltics and Finland Focus Group

Accompanying the document

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL
on the short term resilience of the European gas system

Preparedness for a possible disruption of supplies from the East during the fall and winter of 2014/2015

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1. Work of the Focus Group for the Baltic region and Finland

Given their geographical position and historical links, the Baltic States and Finland are fully dependent on a single source of supply, Russian gas received either directly or via Belarus. Furthermore, connections between the three Baltic Member States notwithstanding, neither of the four Member States is presently connected to other EU gas markets. Consequently, measures to improve preparedness for or to mitigate the effects of a gas supply disruption are by definition of a regional dimension in the majority of the cases.

In view of the vulnerability of the region, the Commission proposed to set up a particular Focus Group to work on a coordinated stress test report for the region. Finland is not connected to the Baltic region via a gas pipeline. The stress tests analysis, however, does not only look at the results of a gas disruption in terms of gas shortages, but also seeks to provide a more comprehensive assessment of the impacts and consequences of a gas disruption for other sectors, notably the power sector. In this regard, Finland is connected to Estonia and onwards to the other Baltic Member States via the Estlink 1 and 2 submarine cable. The inclusion of Finland in this group is therefore important to ensure that the most complete assessment of the impacts of a gas disruption can be made.

In recent years, the Baltic Member States and Finland have built up good experience in cross-border cooperation in the energy sector. The four Member States have been working together in the field of security of supply in the BEMIP Focus Group on Regional Cooperation under the framework provided by Regulation (EU) No 994/2010. As a result of this cooperative approach, the Baltic Member States adopted in 2012 a Joint Risk Assessment of the risks affecting the security of gas supply in the region in addition to their mandatory national Risks Assessments as required by Regulation (EU) No 994/2010. These countries and Finland are moreover working now on the development of a joint Preventive Action Plan and a joint Emergency Plan as provided for in the above mentioned Regulation.

Building on this basis, the Commission asked these four Member States to prepare a joint report on the stress test exercise instead of separate national reports. Member States in this Group were not requested to model the disruptions of the Ukrainian route as such a disruption is unlikely to affect the gas situation in the region. Instead, they were asked to model additional scenarios covering the disruption of Russian gas flows to the EU for different periods, including a seven-month disruption scenario.

The Commission has closely worked with the Baltic Member States and Finland during the months of July and August to ensure the consistency of the analysis and to encourage the further development of joint cooperative measures. A number of physical and virtual meetings were held during these months with the attendance of experts from the ministries and competent national authorities, gas and electricity Transmission System Operators (TSOs), relevant gas companies in the region as well as from the Commission.

2. Description of the system

The Baltic Member States and Finland are today fully dependent on Russian gas, arriving to Estonia, Latvia and Finland through various directly connected pipelines and to Lithuania via Belarus through the Minsk-Vilnius gas transmission pipeline. The latter connection ensures the required capacity for the supply of Lithuania but also of the Kaliningrad region. In December 2014, a new LNG terminal in Lithuania (Klaipeda) is expected to enter into operation allowing for some diversification of gas supplies. Its capacity will be limited at the beginning but it is expected to increase after the capacity in the Klaipeda-Kursenai pipeline is enhanced.

During summer gas flows through these pipelines to the four Member States to meet their gas demand but also to fill the storage facility in Incukalns, Latvia. The direction of gas flows to Latvia is reversed during winter when gas is supplied from Incukalns storage to Russia and Estonia. In winter also Latvia is supplied from the Incukalns storage facility. Lithuania, Kaliningrad and Finland continue to be directly supplied by Russian gas during winter. Consequently there is a certain level of mutual dependency between Russia and the Baltic Member States as regards gas supplies.[1]

In 2013 gas demand amounted to 8,4 bcm for the whole region. Finland had the highest consumption at 3,5 bcm, followed by Lithuania (2,7 bcm), Latvia (1,5 bcm) and finally Estonia with a modest 0,7 bcm.

The share of natural gas in the energy mix shows divergences in these Member States. In the case of Estonia and Finland this share remains rather low at around 10%, although such level should not reduce the risk perception *vis-a-vis* a disruption of gas supply nor the thoroughness of necessary preventive measures. Natural gas plays a higher role in Latvia and Lithuania with shares of 30 and 36% respectively. A characteristic common to all of them is that the use of gas for direct consumption in the residential sector is rather limited (less than 10% in the Baltics and just 1% in Finland) while the main gas consumption takes place in CHPs and district heating units, where gas reaches a share of more than 80% in Latvia and Lithuania. Structurally therefore centralised gas heating prevails, whereas in the case of Finland there is a higher penetration of electricity for heating purposes.

With regard to electricity, the Baltic Member States are part of the same synchronous electricity network (UPS/IPS power system) as Russia and form the so-called "BRELL loop" connecting Russia, Belarus, Lithuania, Latvia and Estonia. Finland, by contrast, is part of the Nordic electricity system. It has a radial connection to Russia and four strong connections to Sweden. The main difference lies in the fact that whereas the connections between Finland and the Baltics (Estlink 1 and 2 submarine connections) allow for the power flows to be controlled and adjusted, power flows between the Baltic Member States also depend on the

[1] Russia has been very outspoken about plans of lowering its dependency as regards the Kaliningrad exclave and has in September 2013 commissioned the first phase of an underground storage and is also looking to build an LNG regasification terminal.

exchanges with mainland Russia, Kaliningrad region and Belarus and therefore cannot be directly controlled.

In terms of power generation, the share of gas-based generation as a percentage of overall generation capacity varies again within the Member States. Figures are relatively low in Estonia and Finland at 5% and 9% respectively. In the case of Estonia, although fossil fuels represent over 90% of its electricity generation, it is mostly domestic oil shale while Finland's power mix is more diversified including nuclear energy (one third), hydro power (around 20%), coal, gas, peat and wind. The ratio is higher in Lithuania with 31% and particularly in Latvia at 67%. In Lithuania and Latvia fossil fuels represent more than half of their generation mix followed by hydro and, in the case of Lithuania, also wind.

3. Main results of the stress test exercise

According to the joint report, a severe disruption of gas supplies from Russia can have serious negative impacts in this region. Even in the scenario of a one-month disruption of all Russian gas flows, there would be important gas shortages for non-protected customers in Estonia and Lithuania. In the absence of the Klaipeda LNG terminal the situation would be more dramatic in Estonia as there would be no gas in their system, including for protected customers, within 4-5 days[2]. Lithuania would be less affected thanks to an agreement with Latvia for the supply of its protected customers from Incukalns storage. Once the Klaipeda LNG terminal enters into operation, however, the supply for the protected customers would be ensured in the three Baltic States in all scenarios.

In the long term disruption scenarios, all Baltic States will face gas shortages affecting non-protected customers to varying extents. Estonia and Lithuania would be most severely affected with more than 80% of non-protected customers being possibly curtailed. Part of these shortages could be nevertheless compensated by fuel switching, although this solution depends on the availability of fuel stocks, for which obligations to hold such stocks exist to some extent in Lithuania and Estonia.

The previous analysis differ from the main results observed in the scenarios modelled by ENTSOG and presented in the Communication, where gas shortages for the Baltic States remain around 30% of the total demand. The reasons for such difference are, on the one hand, the consideration by ENTSOG of a cooperative scenario, and, on the other hand, ENTSOG's assumption that gas stored in Incukalns would remain in the Baltic region.

As regards Finland, although it is fully dependent on Russian gas and isolated from other EU gas markets, the relative small role of natural gas in its energy mix together with the measures already in place (compulsory gas stocks, compulsory stocks of alternative fuels, use of air propane) would significantly mitigate the impact of a disruption. The supply to the protected

[2] Gas commercially stored in Incukalns by Gazprom for the supply of Estonia as well as other consumers in Russia during winter time has not been considered in the scenarios described here according to the joint report prepared by the four Member States.

customers would be ensured even in the 6-month and 7-month scenarios for almost its entire duration, a period during which the suppliers would have to resort to the market for additional alternative fuels for the remaining duration of the disruption. It must be borne in mind that the Finnish strategy is based on the market as the primary method to deal with a supply disruption and in this regard gas users other than protected consumers and other users with a consumption of less than 15 mcm are responsible for their own preparation plans.

Consequently, despite the fact that the impact of a disruption in this region will be serious, it must be put in perspective given the level of preparedness in some cases and the relatively limited role that natural gas plays in some Member States, as mentioned above.

The Baltic States and Finland have also carried out a detailed analysis of the spill-over effects of a gas disruption into the electricity sector. This analysis shows that in the case of Estonia and Finland, gas-based generation will be most likely replaced by other fuels. Impacts in the electricity sector are consequently rather unlikely, particularly in Estonia where the share of gas-based generation is low. Power generator users in Finland have mandatory backup fuel stocks for an average of 3 months. Both countries will have a technical surplus, although this margin could be reduced during periods of very cold temperatures in winter.

The situation would be different for Latvia and Lithuania under the most demanding gas shortfall conditions due to the larger weight of natural gas in their generation mix. In the case of Latvia, severe gas shortages could reduce the available gas-based generation capacity as these power plants cannot switch fuel. Lithuania would also be in need of electricity imports during peak hours, although contrary to Latvia, thanks to fuel switching possibilities, such imports would only be needed to cover peak demand and not base-load power generation capacity. It must be borne in mind that these deficits have been calculated for very extreme conditions and their likelihood is consequently limited.

The joint assessment concludes that the technical surplus in Finland and Estonia should be enough to cover the estimated deficits in Latvia and Lithuania and, during short periods of time, electricity could be transmitted via the existing connections to cover the observed deficits. However, transmission capacities will most likely be insufficient to cover long period demands (beyond a week). These conclusions apply to both short and long term gas disruption scenarios although additional challenges may arise in the latter ones depending on the ability to transport alternative fuel stocks to the gas-based power plants in need of refuelling.

4. Assessment of the main results and envisaged measures

The ability of the Member States concerned, at least the three Baltics States, to face a severe disruption relies to a large extent on the possibility to use two key infrastructures: the Incukalns gas storage in Latvia and the Klaipeda LNG terminal in Lithuania[3]. In this context, a clear framework for third party access rules to the Incukalns storage as well as to the gas

[3] It will be operational as of December 2014 although some test cargos could be used earlier should it be necessary

transport system that connects it with the demand areas is a precondition for the full exploitation of potential regional solutions that the Incukalns storage can provide. Such access is necessary to ensure that gas from the Klaipeda LNG terminal can be stored in Incukalns and transported, through the Latvian gas system, to Estonia. The contribution of those two infrastructures to the security of supply in the region will also benefit from the ongoing work to overcome remaining internal bottlenecks in the transport system, notably the upgrade of the Klaipeda-Kursenai pipeline in Lithuania which will allow more gas to flow northward out of Lithuania.

The Commission has afforded the ending of energy isolation in the Baltics the highest priority and has therefore considered a regional LNG terminal in the Gulf of Finland as part of an appropriate solution together with the Balticconnector (Estonia-Finland interconnector). Such project is featured in the list of key infrastructure projects for the EU (Projects of Common Interest, PCIs)[4], which was adopted by the Commission in October 2013. However, unfortunately, so far no agreement on a cost-efficient solution has been found among the Member States concerned so the project is experiencing delays.

The overall assessment of the joint report and the measures it contains demonstrate a heavy reliance on non-market based measures, with the exception of Finland, which are moreover triggered almost immediately after the disruption of gas supplies takes place. Although the seriousness of the impacts of a severe disruption may require a fast recourse to such measures, including forced curtailments, the Commission notes that the lack of market-based measures in some of the cases leads to a situation in which the use of potentially common tools is foregone even if they could mitigate some of the effects of a severe disruption at the early stages in an efficient manner. This is the case, for example, for the use of interruptible commercial contracts. In this sense, other Member States have conducted sensitivity analyses showing a market-driven reduction in consumption of around 10% as a result of price variations. The immediate recourse to non-market based measures may be dictated by the lack of market signals for gas in parts of the region. In this regard, the development of a functioning wholesale gas market remains a priority alongside the construction of new interconnectors. This will however take some time and not alleviate the situation in the next winter season.

Fuel switching appears the most commonly envisaged crisis-response measure. In some cases power plants have been tested to check their ability to actually switch fuel in the case of limited or no availability of gas. The reduction in their performance, as a consequence of the use of alternative fuels, has been taken into account in the analysis of the spill-over effects of a gas crisis in the electricity system. In addition, there are obligations in place for operators to hold reserves of alternatives fuels to different extents. In Finland obligations cover several months, allowing operators time to arrange additional deliveries in case of need. These mandatory reserves are substantially inferior in Lithuania, 10 days, and even lower in the case of Estonia at 72 hours. Holding sufficient reserves is of particular importance for district heating which is a key source of heat supply to households.

[4] Established in accordance with Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure.

The joint report submitted by the four Member States concerned also contains a wider overview of the joint measures that could be put in practice to address a disruption. It refers in general terms to the use of the above mentioned infrastructures, but does not define concretely when and under which terms and conditions they could be implemented. Some of these measures involve the simultaneous declaration of emergency levels as well as some rough grounds for key agreements – on the basis of the principle of solidarity – to cover the demand of protected customers and non-protected customers in the same proportion in all Baltic States. The conclusion of such agreements in a speedy manner will notably improve the preparedness for a potential crisis in an efficient manner, but it will require clear political agreements on sensitive issues such as the amounts of gas to be supplied and its price and how such gas can be supplied. An example of such initiatives can be found in the discussions between Estonia and Lithuania that will allow for the protected customers of both countries to be served ahead of the non-protected customers. This type of agreement implies the need for an adequate allocation of costs. The latter point is necessary as in the absence of market signals ex ante agreement on prices and compensation mechanisms will be required. Furthermore, it triggers a much needed discussion on a homogeneous level of protected customers in the Member States concerned.

The spill-over effects of a gas disruption for the electricity sector in this region have been jointly assessed and may serve as an example for other regions. Nevertheless, the assumptions regarding estimated electricity demand increases as a result of a gas supply disruption should be further refined to allow for a more complete assessment. Concretely, given the fact that the supply of gas is likely to be ensured for all protected customers in all scenarios, further consideration could be given to the likely demand increases resulting from the use of electricity to replace gas uses in sectors other than households. Also its impact on electricity spot prices should be assessed. Finally, the potential for a holistic approach whereby fuel switch for power generation could be envisaged in order to free up gas volumes to be used in other sectors or Member States should be explored.

5. Recommendations

While the general recommendations made in the Communication are also to be applied for the Member States 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 Member States:

Common recommendations to all Member States in this focus Group

1. **Ensure the necessary and urgent political support for the further development of joint emergency actions for this winter**. Although the work on joint measures has started, it has reached a stage where key decisions must be made on sensitive issues such as the volumes of gas to be shared and its market destination, prices and possible additional costs incurred by some or all of the Member States involved. The nature and impact of these decisions is such that the work at technical level will not succeed unless it is supported by a clear political will at Governmental level to agree on common solutions.

2. **Develop urgently a roadmap for the swift adoption of the joint Emergency Plan and the joint Preventive Action Plan**. The joint stress test report should provide the necessary momentum to conclude as a matter of urgency the work on the joint Plans. These Plans should be detailed and further develop the political agreements for this winter. The joint Emergency Plan should contain clear procedures for the necessary decision making and for the concrete measures to apply, including its appropriate timing and sequencing, in the case of an emergency. Such detailed protocols should cover the sensitive questions mentioned in the previous recommendation and should furthermore avoid or at least minimize the need for ad-hoc decisions during a crisis situation, which usually result in inefficient outcomes.

Estonia

1. **Finalize before December an agreement with Lithuania for the supply of the protected customers in Estonia in case of an emergency with gas from the LNG terminal in Klaipeda (Lithuania)**. The limited role of natural gas in the energy mix in Estonia should not reduce the perception of the risks of a gas supply disruption. Well-designed measures should be established to ensure, as a minimum, the supply of gas to protected customers.

2. **Ensure the feasibility of fuel switching during emergencies**. In the light of the role of fuel switching in an emergency, authorities should consider an increase of alternative fuel stocks or fuel stocks obligations. These stocks should be set at a level that allows installations using such alternative stocks to continue operating during the time necessary for the deliveries of extra stocks to be arranged. In this regard, attention should be paid to logistic obstacles affecting the timely delivery of additional alternative fuels. Beyond holding larger stocks, all preparations and risks assessment should be carried out to ensure that the procurement of additional stocks in a possible crisis situation is not inhibited for whatever reason.

3. **Explore the potential of market-based solutions to deal with or alleviate the gas needs in case of a disruption**. The possibilities to introduce market-based instruments such as interruptible contracts should be duly considered. This will also require raising awareness among consumers about demand side measures.

4. **Ensure clear third party access rules to the gas system.** Given the predominant role that key infrastructures will play in ensuring the availability of gas resources for the whole region, it is of outmost importance that the access to the gas transport system is clearly established in a non-discriminatory manner allowing for undertakings to meet their obligations in ensuring supply to its consumers. Estonia should consider the introduction of third party access rules even if it benefits from a derogation under the Third Energy Package.

5. **Continue efforts to develop new regional infrastructure**. Estonia, as well as Finland, should demonstrate clear political will to accelerate the necessary investments. This applies in particular to the construction of the Balticconnector (Estonia-Finland interconnector) and the Regional Baltic LNG terminal.

Latvia

1. **Ensure clear third party access rules to the storage facility in Incukalns and to the gas transport system**. It is crucial that such access is swiftly established to ensure that gas from Klaipeda LNG terminal can be stored in Incukalns and transported to other areas in the region in the case of a crisis. On a more general basis, third party access to the storage will allow for all interested market players to use the Incukalns facility as a safety buffer for the coming winter. Latvia should introduce third party access rules even if it benefits from a derogation under the third energy package.

2. **Explore the potential of market-based solutions to deal with or alleviate the gas needs in case of a disruption**. Incukalns' large capacity has historically ensured the supply of gas to cover domestic demand in Latvia. However, Latvia remains dependent on a single source of supply to fill its storage and therefore such large capacity should not hinder the development of demand side measures. Such measures should include market-based instruments to cope in the first instance with an emergency situation, such as interruptible contracts, and actions aimed at raising awareness in consumers about the potential of demand side measures.

3. **Revise the definition of protected customers**. In order to facilitate a cooperative approach and an agreement on joint emergency measures, the definition of protected customers should be aligned with the criteria set in Regulation (EU) No 994/2010 to ensure a more homogeneous approach among all Member States involved in this group.

Lithuania

1. **Ensure the feasibility of fuel switching during emergencies**. As indicated in the case of Estonia, authorities should consider whether to increase the alternative fuel stocks or fuel stocks obligations to ensure installations can continue operating while the new deliveries of alternative stocks arrive. Furthermore, due consideration should be given in risk assessments and preparations to possible obstacles affecting the procurement of additional stocks in a possible crisis situation to ensure its removal.

2. **Continue the work on the upgrade of the Klaipeda-Kursenai pipeline**. This project will allow an increase in the capacity of the LNG terminal in Klaipeda. Such enhancement will further contribute to the diversification of supplies in the region and thus reduce the estimated gas shortfalls in cases of severe disruptions of Russian flows.

Finland

1. **Ensure the feasibility of fuel switching during emergencies**. Although the stocks obligations for alternative fuels are amongst the highest in Finland, appropriate consideration should be given in national strategies to obstacles affecting the replacement of such stocks during a crisis, notably as regards logistics.

2. **Continue efforts to develop new regional infrastructure**. Finland, as well as Estonia, should demonstrate clear political will to accelerate the necessary investments. This applies in particular to the construction of the Balticonnector (Estonia-Finland interconnector) and the Regional Baltic LNG terminal.

3. **Continue the work on the development of the local LNG terminals (Turku, Pori. Tornio)**. Such LNG terminals will provide LNG to off grid market.