

A New EU Gas Security of Supply Architecture?

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Introduction

The future role of natural gas in the European energy system is highly uncertain. Several scenarios, however, anticipate an increase of import dependence up to 80% by 2030. Notwithstanding such anticipation, a European approach to ensuring gas security of supply within the EU has not been achieved yet.

While the internal market is key to deliver security of gas supply, additional, new instruments addressing short- and long-term security of supply have been introduced recently at EU level. These include for instance the European Energy Infrastructure Package or the Regulation (EU) No 994/2010.

Today, security of energy supply as a goal in itself is not only enshrined in the European Treaties. Rather, it is also addressed directly and indirectly by various hard and soft law measures that tackle it from several complementary angles. In 2011 the Commission eventually presented the long awaited Communication on the external dimension of energy policy, which identified ways to reinforce the efficiency of EU policies with regard to the external energy relations. However, judging from the lessons learned during past supply crises and the results obtained so far, one may ask whether the current architecture on which the EU gas security of supply policy is built is able to deliver those responses needed in order to meet the growing risks and changing realities EU gas security faces? How should institutions and regulation adapt and respond? And, is the EU on the right track to meet its stated objective – the *European* supply security policy?

The Clingendael International Energy Programme (CIEP), together with the Fondazione Eni Enrico Mattei (FEEM), the Loyola de Palacio Chair at the Robert Schuman Centre of Advanced Studies, European University Institute (EUI) and Wilton Park have organized a series of workshops in order to take stock and discuss a possible new architecture for EU gas security. Discussions and reflections reported from the workshops held under this project have developed into the following concluding ideas and recommendations for a new EU gas security of supply architecture.¹

¹ The deliberations at the four workshops greatly informed the views expressed in this policy brief, but those views belong to the authors only and do not necessarily represent those of individual participants at the workshops or of the four supporting organisations.

Secure and reliable external supply flows to EU markets

Assessing security in the supply/demand balance requires a clear view on the EU's market needs. Security of demand is a prerequisite for security of supply and *vice versa*. Although high levels of uncertainty will have to be recognized, it is expected that natural gas will continue to play an important - and even increasing - role in the EU fuel mix for the decades to come. While natural gas was considered to be the "*fuel of choice*" for some time, it could become the "*fuel of consequence*" especially where alternatives for gas in power generation are facing specific problems of their own. The EU's developing gas demand in the medium and longer terms is largely based on the role that market participants are seeing for this fuel in the overall energy mix. This role is broadly based on the energy policies that the EU and the Member States are defining and implementing and the way in which market parties are applying and implementing the use of gas and the resulting demand.

Energy demand, gas demand and the demand for other energy fuels and sources are basically long-term issues. Accordingly is the policy basis. While the EU has agreed on an energy policy framework for the period up to 2020, policies for the period beyond 2020 are still under consideration. It would be very useful to approach these policies and the resulting role for gas with the view in mind of giving the levels of demand security that would help suppliers to offer the required levels of supply security. In that context, the "golden age for gas" as predicted globally by the International Energy Agency (IEA) could emerge also for the EU. For this to happen, two main conditions need to be taken into account: the development of a clear signal from the EU on its needs for gas and the further deployment of cost effective means for capturing and storing carbon emissions.

Another issue which over the last years has transformed global gas markets and will continue playing an increasingly important role is shale gas. In fact, over the last few years shale gas has experienced in the US a massive development representing today about two thirds of the country's domestic gas production. This "shale gas revolution" has radically changed the global natural gas environment with impacts also for Europe as important new Liquefied Natural Gas (LNG) supplies originally destined to the US market have reached North-West Europe therefore uncoupling spot gas prices from long-term oil indexed gas prices. Due to the shale gas development, gas prices in the US have dramatically fallen over the last years. This new environment provides today great expectations among American leaders for a new American industrial and economic renaissance. Several LNG export projects have been proposed in the US to take advantage of the important price differential with Europe (three to four times higher) and Asia (six-seven times higher). However, there are strong political hurdles for significant US LNG export quantities as this would increase the domestic gas prices. We therefore do not expect important LNG supplies from the US to Europe. With regard to the European domestic dimension, there is presently no production of shale gas in Europe. Poland and France are thought to have large shale-gas resources (together with Norway, Ukraine, Sweden, Denmark and the United Kingdom). However, developing most of these resources appears to be problematic in the EU due to environmental and regulatory issues as well as missing public acceptance. In fact, some European countries like France have for the time being banned shale gas production. There may be some potential in

Poland due to the country's strong willingness to become more independent from Russian gas.

Assessing the major existing and potential external supply sources for the EU, Norway, Russia, the Middle East and North Africa (MENA)-region and the Caspian Basin are the determinant factors for the EU's gas security of supply chessboard.

Norway has always been a reliable supplier, but some concerns are emerging about its longer-term supply capabilities. Significant gas discoveries have not been done in the last decade and different studies are indicating a production peak around 2020.

Russia, the largest resource holder in the world, will continue to be the EU's main external supply source. The EU and Russia have on this point an intractable interdependency. Hence the EU-Russia Energy dialogue (or any other appropriate instrument) should remain and be further developed as a fundamental aspect of any EU gas supply security architecture. Energy supply and demand strategies, developing upstream potentials, coordination of R&D in relation to supply and transportation, policy discussions on market designs and business models are among the prime issues to be put on the dialogue agenda's.

The MENA-region as such is holding large resource potentials, both conventional and unconventional. Domestic consumption in the region is however growing rapidly, largely driven by the power sector, even leading to gas shortages in some countries. Export potentials to the EU therefore are not to be overestimated. EU-relations with the region do bring substantial win-win potentials, both in conventional energy but more specifically in renewable energy sources. The EU should therefore move in the direction of building and further enhancing new and existing institutional frames for political and economic cooperation, where energy could be one of the key vectors on which mutual trust and confidence could successfully be further developed.

The Caspian Basin with its considerable amount of proven gas reserves could be considered as a new frontier for the EU's gas supplies, further diversifying its resource basis. Direct exports to the EU via the Southern Corridor concept would however bring numerous geopolitical and infrastructural hurdles that are still being explored with the governments that are both directly and indirectly involved. The European Commission is being engaged in several dialogues at technical and political levels. The success for the EU in achieving a viable flow of gas through the Southern Corridor to EU markets seems to require effective and reliable mechanisms for the EU to speak "with one voice" and to act and deliver accordingly.

EU gas infrastructures to and through EU markets: EU challenges and external relations

Bringing gas to EU- markets is largely coming via pipelines from the North, the North-East, the East, the South-East and the South. Policy attention is largely focusing on the South Eastern Corridor that should bring gas from the Caspian Basin, and on the South Stream project, bringing Russian supplies. On the Caspian issue, a number of more or less competing projects are on the table. It may be expected that in the course of 2012 further decisions will be made as to the infrastructures to let Caspian gas entering EU markets.

South Stream is a different story, opening a third outlet for Russian supplies in addition to the northern route via the new Nord Stream pipelines and the already existing roads from Russia via Ukraine and Belorussia. There are however some differences between Nord Stream and South Stream, when it comes to ownership², but more importantly when it comes to project definition. North Stream is landing on the EU-border, where it is further connected to other pipelines. South Stream is bringing gas through the EU, with a number of exits in its transiting EU and non-EU markets. This brings a different and still pending regulatory framework, especially in relation to the EUs Third Energy Package. In addition to that, the geopolitical dimension in relation to both the Ukrainian route and the competitive position vis-à-vis Caspian supplies brings further complexities. The next 1 to 2 years will probably be decisive for the whole South-Eastern Corridor and its gas supplies to the South Eastern EU market.

When it comes to the internal EU infrastructures for gas, the European Network of Transmission System Operators for Gas (ENTSO-G) has a leading role to play. It is in the framework of its new ten-year network development plans (TYNDP) where coordinated network development planning at EU and regional levels will be done. Financing and the relevant regulatory EU and national regimes are critical factors, not only when it comes to risk/reward balances, but also for the various access conditions and capacity allocation mechanisms. National regulators and the new ACER will be very instrumental in this regard. Similar issues are playing a role in the context of developing storage capacity and receiving terminals for LNG. All these issues are not only relevant for the TSOs and the shippers they are servicing, but also to a large extent for the EUs external suppliers, as the regulatory context will be a critical factor in assessing the overall business cases for securing existing and new supplies on a long-term basis.

The regulatory risk as it is perceived by the gas industry, the TSOs, the suppliers, the producers inside and outside the EU, will bring a major challenge to regulators and policy makers. The Third Energy Package is bringing a huge and ambitious regulatory agenda for a wide variety of intra-EU network access and capacity use issues that will further shape the internal EU gas market. Its Network Codes and underlying Framework Guidelines need to strike a fair and effective balance between the regulatory designs and the role that markets are allowed to play. Issues such as crossing border capacity allocation and congestion management and their impact on commodity markets and maybe forthcoming (pipeline) capacity markets, together with issues around transmission pricing, wholesale markets, spot markets, market hubs and their markers for market liquidity and price alignments, allowing regional differences wherever feasible, will be determinant factors for maintaining, developing and securing competitive gas supplies to EU consumers.

It will be quite clear that all these issues have to be seen in the context of changing market conditions, both within the EU and in the more global context of evolving international gas markets. Within the EU, the role of gas in the energy equation will be changing, due to the EUs ambitious sustainability agenda and the increasing share that intermittent renewable energy sources will play in the power generation fuel mix. Gas for power will increase, especially in a flexible way, transforming gas more and more into a peak-load fuel, with all

2 NS has a 51% Gazprom-stake, with some major EU industry stakes for the other 49%, whereas SS is a 50/50 venture between Gazprom and (other) EU partners.

sorts of consequences for the underlying business and market models and calls on infrastructure capacities. This will all have impacts on the (continuing) attractiveness of EU markets for external gas suppliers. Developing, designing, interpreting and applying these new regulatory frameworks require therefore close and transparent consultations with all stakeholders inside and outside the EU. Decision making by the relevant EU authorities therefore require striking a fair balance between the internal policy agenda and the external policy dimensions. The new Architecture should reflect this balance.

Infrastructures and the issue of internal solidarity

Solidarity has proven to be a missing point in European energy policy in the past. Europe has experienced a European gas market mainly based on national politics with the “national champion” being responsible for securing the supply of each country independently.

The January 2009 gas crisis was only one catalyst that led to making solidarity a priority rather than a slogan in the gas security of supply context. Today, besides the fact that the basic freedoms of the internal market, such as the free flow of goods and services, etc., are guarantors of solidarity and the more specific recent enshrinement of the obligation of the Member States to act in a “spirit of solidarity” – referring to the new energy chapter, Article 194 TFEU – solidarity in gas is translated into concrete action mainly by means of the secondary law.

It is, first of all, the gas security of supply Regulation (EU) No 994/2010 that brings a solid base for organizing and managing unforeseen supply interruptions on a short-term basis. Especially for gas, with its major differences in gas supply structures in the EU, the Regulation is the EU-wide solidarity instrument in times of gas shortages. It is not only the 2009 gas crisis, but also earlier and later developments, continuing as recently as winter 2011, that are giving important experiences for further refining and improving procedures under the Regulation. This articulation and lessons-learned program should continue, without forgetting that each crisis has unique characteristics and is, therefore, unpredictable. Certainly, there are issues that still need to be resolved or are still missing in the Regulation, one example being public service obligations. In particular, the way in which we must manage a public service obligation that is in collision with solidarity. For instance, France has a level of public service obligation higher than that in the 2010/944 Regulation. That means consumers are more protected than the minimum level set up by the Regulation. During a gas crisis, what is the right way of dealing with two contradicting obligations? To lighten temporarily this obligation in order to allow France to respect its obligation towards all the European countries in gas needs?

A second legal tool providing the prerequisite for solidarity being infrastructure and interconnections is the European Energy Infrastructure Package. The Regulation on the energy infrastructures and the Connecting Europe Facility are measures that address *ex ante* solidarity, to ensure that the EU infrastructure is fit and in good condition in case there should be a future crisis. The new infrastructure package is actually, finally after many years, trying to address the need to invest, by looking at the common European interests and not just the interests of the private companies or even the blind interest of countries.

Another precondition for solidarity is transparency. In this respect, the increased efforts in EU

foreign energy relations, most recently with the proposal for a Transparency Decision for intergovernmental agreements, is a promising step in the right direction. The EU is on a way towards solidarity *ex ante* when it comes to institution building for crisis prevention, as well as for ensuring crisis management on the spot in a spirit of solidarity.

The new architecture: recommendations for a new approach

It would seem quite clear that securing supplies needs to be balanced with securing demand, and *vice versa*. The EU's developing gas demand in the medium and longer terms is largely based on the role that market participants are seeing for this fuel in the overall energy mix. This role is broadly the result of the energy policies that the EU and the Member States are defining and implementing. Energy demand, gas demand and the demand for other energy fuels and sources are basically long-term issues. Again, and so is the policy basis. As it is clear that the EU has agreed an energy policy framework for the period up to 2020, that is implemented at national levels and that for the period beyond 2020 these policies are under consideration, it would be very useful to approach the issue for a "new architecture" with these timeframes in mind.

For the period up to 2020, energy policy has decided on the role of renewable energy sources (RES) in the fuel mix, which gives some indication for the role of gas. With the increasing role of RES and maybe other non-fossil fuels for the period beyond 2020, the role of gas in the mix and more precisely the role of gas in the system becomes more important, exciting and less predictable. Important in the way that new and continuing supply arrangements will have to be made, both in terms of commodities and in terms of infrastructure capacity. Exciting, as the role of gas in power generation will change, due to its potential role of becoming a "flexibility fuel" in relation to the increase of intermittent energy sources, and hence the need for changing structures in market and regulatory designs, including prices, business models and infrastructure access conditions.

A very clear vision at EU level on these changes would therefore be very appropriate and should form an integral part of a new Architecture. The forthcoming discussions on the EU's Road Maps 2050 are presenting useful opportunities. Such a view could also give a clear signal to the upstream sector in the value chain, both within the EU but more importantly for the EU's external suppliers. This view could be seen as a basis for further developing, focusing and articulating the EU's external energy relations, energy diplomacy and policy in building secure and reliable relations with the EU's main gas suppliers and transport and transit routes.

For the period up to 2020, the policy agenda is focusing on the completion of the internal gas market design and the conditions for incentivizing the timely development of the necessary infrastructures. For these issues the speedy implementation of the Third Energy Package is critical, together with the timely decisions on the actions proposed in the new Infrastructure Regulation. A number of relevant issues are still pending, and it would be appropriate as well to clear them up without delay in order to give more clarity to all market parties in the value chain, including the EU's external suppliers.

A new EU Architecture for securing the EU's gas supply basis in the medium and longer terms should very well reflect the issues mentioned above. Special attention should be given

to the 2050 Energy Road Map, as the policy discussions therein could be considered the global and integrated EU view on the longer-term energy mix with due regard to the transition towards a low-carbon energy economy. In addition, policy discussion and implementation are also relevant for gas supply security in the context of the EU's external energy policy. As a third consideration, the more medium-term agenda of "completing" the EU's internal gas market shall be mentioned.

With respect to the new architecture, it is strongly recommended to make a distinction between a longer-term focus, i.e. on the post 2020 period and a shorter/medium term focus, i.e. on the period up to 2020. For both periods it is recommended to define a clear and articulated policy vision.

The long-term vision

The long-term vision should cover three specific policy chapters: the role of gas in the energy fuel mix and energy system, the EU external energy policy focus and the EU internal gas market.

The role of gas

Security of supply and security of demand are two sides of the same coin. Building market confidence in the long-term is essential for both upstream and downstream investments and market signals. The EU should therefore develop a clear vision of the role it sees for gas in its global energy mix as part of the 2050 Roadmap. A choice should be made whether gas will (again) be a "fuel of destination", i.e. the fuel that gives in the medium and longer-term the most cost-effective and sustainable solution? Or will gas rather be considered as a "fuel of transition", i.e. the primary fuel that would help the EU on its road towards the carbon-free energy economy? Or, finally, will gas be considered as a "fuel of consequence", i.e. the fallback option should other options fail to deliver at the necessary times?

In any scenario on the role of gas in the energy system, the interaction between the gas and power sectors will need to grow dramatically. That would mean that gas demand would become more and more a function of the power generating systems, due to its large advantages as a flexible fuel. In addition, new innovative concepts of gas-to-power and power-to-gas interactions, including the application of electrolysis and storage technologies, will bring further options for the use of gas in the energy system. This changing role of gas will have no doubt dramatic consequences for the use of the gas-infrastructures (transmission and storage), with changing business models and increasing spot-oriented intra-EU trade. Market designs and regulatory designs will have to be reconsidered and the interaction between the power market and the various fuel markets, including the carbon market will increase as well. If Carbon Capture and Storage (CCS) is to be applied at larger scales, fine-tuning between the gas and power chains with the carbon chain would become a further challenge. A new gas supply architecture should reflect on these developments in order to enhance supplier confidence and consumer needs.

The external energy policy focus

External energy relations at the EU level, especially when external gas supplies are involved, should be built upon the vision mentioned in the first paragraph, and should lead to specific strategies for the EU's main suppliers. Taking due account of the developing global gas markets, focus should be put on, respectively, Norway, Russia, the Mediterranean region and the Caspian Basin. For each of these, it would be appropriate to create a specific mechanism for periodic discussion, review and institutionalized approaches regarding gas supplies and related relevant policy issues.

As examples, the northern dimension could include the development of market structures and business models and could also give due account on the role of hydro as a storage option for managing intermittent energy sources, as well as the schemes for deploying large scale CCS. The eastern dimension should focus on the issue of mutual "win-win" schemes for applying reciprocity criteria in both the upstream and downstream segments of the value-chain. Equally important would be the issues regarding East-West transit-lines on the way to and through EU-markets, and eventually, the enhancement of the early warning systems in the case of supply interruptions.

The southern dimension could focus in a broader way on economic cooperation, including energy issues. Changing geo-political structures in the region might bring new opportunities for using the wide variety of EU instruments. Global political cooperation in the Mediterranean region, including on renewable energy such as the Desertec project and the relating Medgrid or Medreg initiatives might bring new momentum. The SE-EU dimension and its strategic energy pathways between the East and the South would bring further options for the EU, building, where necessary, on the Energy Community Treaty-framework, and could also include the ways and means of innovative gas purchasing schemes.

The internal EU gas market

The EU should strive to remain, for all external suppliers and for all of the three possible visions on the role of gas, an attractive market for suppliers. The internal market model should reflect, therefore, the changing market structures and conditions that will need to develop from the broader vision of the role of gas. For instance, the emergence of gas as a fuel for delivering flexibility and back-up in the increasingly RES-dominated power systems may have serious consequences for the prevailing gas market and regulatory designs. As part of the architecture, the EU should consider redefining its vision on the internal gas market, and remaining open to suggestions from its main external suppliers.

This changing role of gas will have a particularly precise and challenging impact regarding issues that go beyond national authorities and policy-making: short-term and spot trades will need to increase to manage flexible market demand; cross-border exchanges will further develop; and cross-border arbitrages in the gas/electricity/carbon market dimensions will have to develop (relying more frequently on short-term capacity requirements in pipelines and interconnections, with resulting capacity (under)use and allocations). Transits will be an expanded, normal way of moving gas through EU-markets, and infrastructure access and pricing will need to accommodate these flows. Storage will become more important, managing seasonal variations as well as much shorter-term daily or weekly variations.

For these and other issues, effective cross-border regulatory oversight and designs will need to be developed further, perhaps more on regional levels than for the EU as a whole. A more articulated and defined view on the post-2020 EU gas market should be an essential element of the EU's supply architecture regardless of whether gas stays in the fuel mix for the next two to three generations or whether it is used solely as a back-up fuel in case other generating technologies do not deliver.

The short-term vision

The short-term vision should equally cover three policy chapters: the Infrastructure Package implementation, the (expedited) implementation of the Third Energy Package, and the fine-tuning of the concept of solidarity. The implementation of these two Packages requires timely decision-making for full application since the window-of-opportunity for the cost-effective transition to a low carbon energy economy is anticipated to close around 2018. The long-term vision for the role of gas could be less meaningful if not supported by the short-term actions that are required. Short-term actions are therefore considered as the first step to moving beyond 2020. In addition, a further enhancement of the existing emergency mechanism would result in a strengthening of solidarity within the EU and, thus, contribute to global supply security.

The European Energy Infrastructure Package

New investments in long-haul and cross-border pipelines for gas are critical components of any supply Architecture. The Infrastructure Package covers a number of issues that call for timely implementation: enhancing the Project of Common Interest (PCI) process; streamlining the Cross-Border Cost-Benefit Analysis (CB-CBA) approach; expediting efficient CB-licensing and permitting; and specifying the role of public money versus private money. The three EU institutions should therefore work expeditiously on a decision on the Regulation, allowing it to enter into force as early as 2013. In addition, the various implementing devices, such as CBA-methodologies and arrangements for CB-regulatory decisions could start as soon as 2012 if prioritization by [the Agency for the Cooperation of Energy Regulators \(ACER\)](#) is allowed and facilitated.

The Third Energy Package

The Third Energy Package is a solid basis for organizing the EU gas market and the TSO industry. Implementation does not yet have the proper priority at the national level, which influences the work at EU-level. The process of establishing the Network Codes and the supporting Framework Guidelines should further facilitate a timely completion with some further political guidance, if necessary, by the Council. Refraining from addressing minutiae would streamline this process.

The ongoing cross-border restructuring process in the TSO-sector, which could be considered as a positive step towards further market integration, may require additional attention in order to manage an effective and supportive TSO-certification process. Once again, ACER plays an important preparatory role, especially when it comes to further strengthening the cooperation of [National Regulatory Authorities \(NRAs\)](#).

Securing regulatory stability to allow the necessary market dynamics deserves continued attention by all stakeholders and authorities. The ongoing Regional Gas Initiatives (RGI) and other informal discussion platforms have roles to play in seeking specific solutions for regionally specific issues. If these mechanisms are working effectively, an EU-wide model for an internal gas market would become less urgent.

High-level attention is needed and should be given to the two issues that are of significant concern to some of the EU's external suppliers. The relevant conditions in the Third Package, i.e. on non-EU ownership in infrastructures and on efficient cross-border transiting of gas flows, should be further articulated and discussed with external suppliers at the proper levels. These issues can, and should, be solved over the course of the next year or so.

The building of energy solidarity in the EU

The EU is on a promising path towards the building of EU energy solidarity both *ex ante*, when it comes to institution building for crisis prevention, and on the spot, in terms of crisis management in a spirit of solidarity.

Regulation (EU) No 994/2010 concerning measures to safeguard security of gas supply is the EU's key solidarity instrument providing a solid basis for the management of unforeseen supply interruptions on a short-term basis. Certain issues that still need to be resolved or are missing can be overcome based on the experiences from past crises. The transposition of the lessons learnt into the existing framework can further refine and improve the procedure in place.

Ultimately, the prerequisite to solidarity is transparency. In this respect the increased efforts in the area of foreign energy relations with supplier countries play an important role. Following the long awaited Communication of the EC in September 2011 here especially the proposal for a Decision setting up an information exchange mechanism with regard to intergovernmental agreements between Member States and third countries in the field of energy is a promising step in the right direction.