



NATO Parliamentary Assembly

SCIENCE AND TECHNOLOGY COMMITTEE

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EUROPEAN ENERGY SECURITY:  
THE SOUTHERN GAS CORRIDOR

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REPORT

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## I. INTRODUCTION

1. In 1973, the problem of energy security emerged in earnest on the international scene when the Organization of Petroleum Exporting Countries (OPEC) imposed an oil embargo on the United States and a number of its allies. Since then, energy security, defined as “the uninterrupted availability of energy sources at an affordable price” (International Energy Agency, n.d.), has increasingly become intertwined with national security, foreign policy, economic independence, sustainable development and social welfare. Access to cheap, efficient and sustainable energy supplies, along with the physical security of critical energy infrastructure, has become essential to the functioning of modern industrialized societies.
2. In the Euro-Atlantic area, one of the most pressing energy security concerns is the security of natural gas supplies to Europe, in particular to the European Union (EU). In 2013, the EU needed to import 65.2% of its gas in order to meet its annual demand of about 432 bcm (billion cubic metres) (Eurostat, 2014; BP, 2014). By 2035, it is estimated that the EU’s gas import dependency will rise to 80% (European Commission, 2014a). While the EU is even more dependent on oil imports, where it already imports close to 90% (European Commission, 2014a), fundamental differences render its natural gas dependency much more acute. Whereas a flexible global market in terms of availability exists for oil, natural gas markets are still very much regionalised. Globally, there are substantial price differences for natural gas: for example, in the United States the price for a million British thermal units was 3.71 USD in 2013; in Germany around 10.72 USD; and in Japan circa 16.17 USD (BP, 2014). One important reason is that natural gas is more difficult and costly to transport. Although the substantial improvement in the Liquefied Natural Gas (LNG) technology has led to the constitution of a global LNG market, most of the natural gas is still transported via pipelines.
3. The central problem of EU energy security is its overdependence on a limited number of natural gas suppliers. The overall gas picture is, in fact, reasonably diversified. In 2013, Russia provided 39% of the EU’s gas imports, Norway 33%, and Algeria and Libya together 22%. Other natural gas imports come mainly in the form of LNG, for example from Qatar or Nigeria (European Commission, 2014b). However, many European states are fully or overwhelmingly dependent on a single supplier. Six members of the EU are 100% dependent on Russian natural gas, and another six are more than 50% dependent (European Commission, 2014b).
4. The natural gas crises between Russia and Ukraine over the last decade have clearly illustrated Europe’s overdependence on Russian supplies, as Russia repeatedly uses energy supplies as a tool in political disagreements. Indeed, the current crisis in Ukraine poses a potential threat to European energy security. Due to the dispute between the two countries, Russian gas deliveries to the EU could be disrupted. Up to 15% of Western Europe’s gas imports run through the Ukrainian gas transit system, the largest in the world (International Energy Agency, 2012b). Over the last years, the EU has therefore pursued policies to diversify its routes, sources, and supplies.
5. Security of supply is vital for the Euro-Atlantic area as a whole, not only for the EU. However, NATO’s role in energy security is limited, although it has grown in recent years. As the Chicago Summit Declaration clearly indicates, issues of energy security “are primarily the responsibility of national governments and other international organisations concerned” (NATO, 2012). Still, NATO’s Strategic Concept notes the need to ensure resilience in the face of attacks on or disruption of vital communication, transport and transit routes on which international trade, energy security and prosperity depend (NATO, 2010). NATO is therefore tasked to “develop the capacity to contribute to energy security, including protection of critical energy infrastructure and transit areas and lines, cooperation with partners, and consultations among Allies on the basis of strategic assessments and contingency planning” (NATO, 2010). At the Wales Summit, NATO reaffirmed its commitment to “continue to consult on and further develop our capacity to contribute to energy

security, concentrating on areas where NATO can add value” (NATO, 2014). In practice, NATO is already adding value to national and international efforts. Consultations, research projects and workshops are ongoing at many different levels and with external partners. Operations *Active Endeavour* and *Allied Provider* help protect crucial shipping lanes in the Mediterranean Sea and off the Horn of Africa. And most recently, NATO accredited the NATO Energy Security Centre of Excellence in Vilnius, Lithuania.

6. The current mix of national and EU energy strategies, with NATO adding value where it can, should yield the best path to increase the Euro-Atlantic community’s energy security. The European states and the EU have all the necessary tools and competencies to improve Europe’s energy security and thereby enhance Allied security as a whole. Nevertheless, it is of utmost importance to discuss European energy security in the context of the NATO Parliamentary Assembly. The Assembly brings together a unique set of lawmakers from countries that need to work together to improve European energy security. This includes countries that are expected to become new exporters to Europe, for example Azerbaijan and the United States; crucial transit countries, such as Georgia and Turkey; and traditional suppliers, such as Algeria and Norway. In other words, the NATO PA offers an important forum for consultation, dialogue, and discussion on European energy security.

7. This report first examines Russia’s alleged use of energy as a political tool in the Ukraine crisis and the EU’s actions to improve supply security of natural gas. It then analyses the new and potential sources of natural gas in Europe’s Southern and Eastern neighbourhood. Throughout the report, particular emphasis is placed on the EU’s Southern Gas Corridor Project, which envisages the transport of Caspian and Middle Eastern natural gas resources to Europe. The report will conclude with some remarks on how the Euro-Atlantic community can develop strategies to direct the resources available in the neighbourhood in order to improve European energy security.

## **II. RUSSIA, EUROPEAN ENERGY SECURITY, AND NATURAL GAS DIVERSIFICATION**

### **A. ENERGY AS A POLITICAL TOOL FOR RUSSIA IN THE UKRAINE CRISIS**

8. The current crisis in Ukraine has brought the issue of how energy can be used as a political tool to the forefront of the agenda and has provided new impetus to increase Europe’s energy security. Addressing the Estonian people a day before the NATO Summit in Wales, US President Barack Obama, for example, described the situation that the Euro-Atlantic community faces vis-à-vis Russia as “a moment of testing” (Obama, 2014). He underlined that “no country should ever be held hostage to another nation that wields energy like a weapon.”

9. Energy politics has played a crucial role during the Ukraine crisis. Many in the Euro-Atlantic community have accused Russia of using natural gas supplies to affect the Ukrainian political situation. In June 2014, Russian Gazprom stopped natural gas supplies to Ukraine, after it had threatened to do so for months. The company insists that Ukraine must first pay at least a large part of its energy bill, which amounts to 4.2 billion EUR in total, before supplying gas again. To prepare for the winter, Ukraine is storing up gas, with the aim of holding 17.2 bcm of natural gas in its storage facilities (Reale and Bor, 2014), but it still needs significant gas deliveries throughout the winter 2014/2015. With the help of the EU, Ukraine and Russia appeared to strike an interim deal only in late September 2014. Under the deal, Gazprom will provide Ukraine with at least 5 bcm of natural gas through the winter months at a price discounted by 20%, if Ukraine pays 2.4 billion EUR in outstanding debt by the end of 2014 and if it pays for the gas in advance. In the meantime, Hungary, Poland, and Slovakia have signed reverse flow agreements with Ukraine. The EU has made it clear that nothing prohibits countries from reselling gas they have purchased to Ukraine. However, Russia and Gazprom call these agreements illegal and threaten that reverse

deliveries could lead to supply cuts to these countries. As a consequence of these announcements, Hungary suspended deliveries indefinitely in late September.

10. The main international response to Russian actions in Ukraine, including its use of natural gas supplies as a political tool, has been a number of rounds of sanctions, mainly by the EU and the United States. The latest round of sanctions was put into place in mid-September. The EU and US sanctions differ in scope, due to the greater European economic dependence on Russia. The sanctions selectively target the energy, financial, and defence sectors, as well as individuals close to the Russian President and those directly implicated in the efforts to destabilise Ukraine. One key aim of the sanctions is to affect the Russian energy sector, in particular targeting oil companies that are engaged in Arctic and deep-water exploration. Energy companies such as Gazprom, GazpromNeft, Surgutneftegas, Transneft, and Rosneft (in which BP has a 19.75% stake) are all affected to varying degrees. Another key goal of the sanctions is to increase Russia's isolation from the global financial system. For example, the EU has called on the European Investment Bank (EIB) to suspend its financial investments in Russia. Furthermore, those defence companies whose weapon systems have found their way into separatist hands in Ukraine have been especially targeted, including the manufacturer of the Buk missile system, which most likely brought down Malaysian Airlines flight MH17. Russian President Vladimir Putin accused the EU and the United States of violating World Trade Organization (WTO) rules with the current sanctions. According to President Putin, "[l]imits introduced against Russia are none other than a rejection by some of our partners of basic WTO principles. This is all done in a politicized manner, without any observation of WTO norms" (*Deutsche Welle*, 2014). In response to the latest round of sanctions, Russia has announced a one-year ban on food imports from EU and the United States, citing safety concerns as the official reason.

## **B. EU ENERGY SECURITY POLICY**

11. The tensions between the Euro-Atlantic community and Russia are powering the search of European countries for alternative energy sources and suppliers. However, improving energy security has been a core goal for a long time, as the EU's total energy bill amounts to a significant fraction of GDP (3.1% in 2012) (European Commission, 2014a). The goal has been enshrined in the EU's strategic thinking since the 2003 European Security Strategy (EU, 2003)

12. Energy policy is a shared competence between the EU and its member states under the EU's Lisbon Treaty. The EU's overall vision is to create a "low-carbon economy which ensures competitive and affordable energy for all consumers, creates new opportunities for growth and jobs and provides greater security of energy supplies and reduced import dependence for the Union as a whole" (European Commission, 2014a).

13. Naturally, the picture for future demand for natural gas and import dependency constantly changes. It depends, inter alia, on economic trends, the rate of decline in European natural gas production, the ability to replicate the shale gas success of the United States as well as the success of renewable energy and energy efficiency efforts (Niftiyev, 2013). However, analysts predict that absolute demand for natural gas and import dependency will increase at least until 2030. Gas demand could rise about 38% from 2012 to 2030 (Niftiyev, 2013), and import dependency, as already mentioned, to 80% by 2035.

14. Overall EU energy policy is guided by the "2020 Climate and Energy Package", which will be replaced by a framework for the years 2020-2030 in late October 2014. Its current energy security efforts focus on:

- common internal and external action;
- full integration of the energy market by 2014;
- diversification of energy imports;
- sustainable development of indigenous sources;
- investment in energy infrastructure;
- energy efficiency and savings;
- research and innovation.

15. In the context of this report, common external action, import diversification and infrastructure investments are keys to improve Europe's security of natural gas supplies. And indeed, the EU has redoubled its efforts to pursue these goals.

16. The EU has increased the coherence and co-ordination of its external energy policy in recent years. An information exchange mechanism on intergovernmental agreements with third states proves particularly important. Member states are obliged to submit existing and new contracts with an impact on the internal energy market or security of supply to the EU. Countries can also ask for help from the European Commission (EC) for agreements under negotiation. Furthermore, new information exchange mechanisms have been established, for example an "Energy" Working Party, a Gas Co-ordination Group, and a Strategic Group for International Energy Co-operation. Additionally, the frequency has been increased at which energy issues are discussed in the EU and between member states before they meet in international organisations concerned with energy issues, for example the Energy Community or the International Energy Agency.

17. The external dimension of EU energy policy has also been strengthened with the 2011 communication entitled "The EU Energy Policy: Engaging with Partners beyond our Borders" (European Commission, 2011). The policy aims to build up the external dimension of the EU internal energy market; to strengthen partnerships in order to secure, safe, sustainable and competitive energy; to improve access to sustainable energy for developing countries; and to better promote EU policies beyond its borders. In the context of this report, the need to diversify and expand energy supply routes from neighbouring countries is a central pillar of this external energy policy.

18. Diversification of natural gas imports has indeed drawn concerted efforts in recent years. The EC first raised the need to develop a Southern Gas Corridor in its 2008 Second Strategic Energy Review, titled "An EU Energy Security and Solidarity Action Plan" (European Commission, 2008). It described the Southern Corridor as "one of the EU's highest energy security priorities." The Southern Gas Corridor will be the fourth "artery" for importing natural gas, alongside the Eastern Corridor (Russia), Northern Corridor (Norway), and Western Corridor (North Africa). The corridor should bring natural gas from the greater Caspian Sea region as well as the Middle East to Europe.

19. Major efforts are also needed to modernise and expand energy infrastructure in Europe and to interconnect networks across borders within the EU and with its external partners. The EC estimates that until 2020 around 200 billion Euros are needed for investment in order to attain the EU's long-term energy and climate goals (European Commission, 2013a). One of the policy tools to attract these long-term investments and complete the physical integration of the EU energy market is a list of Projects of Common Interest (PCIs). PCIs benefit from accelerated planning and simplification of permit-granting procedures, and reduction of administrative costs (European Commission, 2013b). For the sake of the sustainability of energy supply security, the funding and realisation of PCIs should be based on commercial attractiveness and economic feasibility, which also prove important for the promotion of a regulatory framework attractive to investment. While a majority of the projects are concerned with integrating the EU's internal market, potential PCIs conceived as part of the Southern Gas Corridor feature prominently on the list as well.

20. EU energy security efforts have picked up momentum during the crisis in Ukraine. In late May 2014, the EC released a European Energy Security Strategy, with the objective of ensuring uninterrupted energy supplies for the coming winter (European Commission, 2014b). The Commission proposed conducting comprehensive risk assessments, i.e. stress tests, to determine how the energy system can cope with disruption in supply. The EU members conducted their first natural gas stress tests by the end of August, sending the results to the EC which will present policy recommendations in October 2014 (Dixon, 2014). Going forward, backup mechanisms will be developed, which include increasing gas stocks, reducing energy demand, switching to alternative fuels and developing emergency infrastructure (for example reverse flow capacities) and pooling parts of the existing energy security stocks (European Commission, 2014b). At present, EU law requires member states to store enough gas to cope with 30 days of high demand. This could, however, be improved; regulations for other crucial energy resources are much stricter. For example, EU member states are required to maintain 90 days' worth of oil stocks (Krukowska, 2014).

21. The European Energy Security Strategy addresses medium to long-term challenges and proposes actions in five key areas, which build upon current policy goals (European Commission, 2014b):

- increasing energy efficiency;
- increasing energy production in the EU and diversifying supplier countries and routes;
- building infrastructure links to respond to disruptions and completing the internal energy market;
- speaking with one voice in external energy policy;
- strengthening emergency mechanisms and protecting infrastructure.

22. The new President of the EC and former Luxembourgian Prime Minister, Jean Claude Juncker, has stated that the EU needs a "resilient Energy Union", reforming and reorganising Europe's energy policy. He has therefore created the post of Vice-President of the Energy Union, to be held by Slovakia's Maros Sefcovic. The new portfolio is a clear indicator that energy issues will have a very important role in the 2014-2019 EC. Among other objectives, the Vice-President of the Energy Union is to diversify Europe's energy sources, make the goal of improving energy efficiency by 30% by 2030 binding, connect energy infrastructure, and "unite our negotiating power vis-à-vis third countries" (European Commission, 2014c). The appointment of former Polish Prime Minister Donald Tusk as new EU Council President also raises the chances of focused EU efforts, as he has been a firm supporter of a stronger EU role in energy security. Most notably, in April 2014, he argued that the EU should co-ordinate the purchasing of natural gas and thus bring more leverage in price negotiations (Tusk, 2014). Tusk also suggested that the EU help co-finance up to 75% of the price of upgrading the energy infrastructure and storage capacities, particularly for member states that are highly dependent on Russia.

23. Among other conclusions, the European Council of 23 and 24 October 2014 once again emphasized "the fundamental importance of a fully functioning and connected internal energy market" (European Council, 2014). For the EU, it remains a priority to prevent inadequate gas interconnections and to ensure synchronous operation of member states within the European continental networks. Notably, the EU will facilitate improved integration of member states that are less well connected to the internal market, in particular the Baltic States, Portugal and Spain, as well as remote parts of the EU.

24. Against the background of these overall strategies to increase natural gas security of supply, the need for sustainable partnerships for Europe has gained increasing importance. In this regard, Turkey, located close to the energy-rich regions, emerges as an important actor and a reliable transit country for the Southern Gas Corridor, especially since as a member of NATO, it is an ally of most EU countries. Turkey plays a key role in the Southern Gas Corridor project, a project to

which Turkey has committed itself economically and politically from the beginning. Turkey will not only connect Azerbaijan's natural gas resources with Europe, but could also play an important role regarding Iran's and Iraq's gas. The next sections take a closer look at which new sources can contribute to natural gas diversification, how they can do so, and what obstacles remain before they can reach their full potential.

### **III. CONNECTING NEW NATURAL GAS RESOURCES WITH THE SOUTHERN GAS CORRIDOR**

#### **A. THE POTENTIAL CONTRIBUTORS: AN OVERVIEW**

25. In the EU's quest to diversify routes, sources, and suppliers of natural gas, the Southern Gas Corridor has been of central importance since the early 2000s. The countries in the Caspian Sea region, the Middle East, and the Eastern Mediterranean basin are those that can potentially provide new natural gas through this corridor. The strategic importance of this fourth artery, as a complement to existing supply routes, is critical beyond its economic and commercial potential. Indeed, the region is also crucial for Turkey's natural gas security as well, as Turkey is 98.6% dependent on natural gas imports (International Energy Agency, 2013).

26. The wider Caspian Sea region has emerged as a particularly crucial region in international energy politics because of its vast natural gas reserves. The US Energy Information Administration estimates that the proven reserves in the region, comprised of Azerbaijan, Iran, Kazakhstan, Russia's Caspian region, Turkmenistan, and Uzbekistan (which is not a littoral state of the Caspian Sea), stand at 8.34 tcm (trillion cubic meters) (US Energy Information Administration, 2013d). Russia's natural gas resources make up more than a third of the total in the Caspian Sea region. However, imports from these fields would not contribute to diversifying the EU's natural gas imports. The EU has striven to co-operate with other Caspian Sea countries and signed memoranda of understanding with Kazakhstan, Turkmenistan, and Uzbekistan, in light of their potential as transit countries or suppliers of energy. Currently, next to gas agreements already signed with Azerbaijan, the highest hopes of importing gas from the region rest on Turkmenistan and, given the right political circumstances, Iran. The prospects for imports from Kazakhstan and Uzbekistan are more distant at this point. Both countries have large natural gas resources, with proven reserves of 1.3 tcm and 1.1 tcm respectively (US Energy Information Administration, 2013d). However, poor infrastructure facilities make it difficult for Kazakhstan to become an important gas supplier in the short term, whereas Uzbekistan's gas fields are located in the eastern and southern parts of the country, making exports to Russia and China much easier. The following sub-sections therefore only examine the roles Azerbaijan, Turkmenistan, Iran, Iraq, and the countries of the Eastern Mediterranean basin which could play in the Southern Gas Corridor supply chain.

#### **B. AZERBAIJAN**

27. From the beginning, the main efforts of the Southern Corridor project focused on Azerbaijan, given the maturity of its energy sector, its proven gas reserves of close to 1 tcm (US Energy Information Administration, 2013c), and the government's eagerness to export to Europe. With final investment decisions on Shah Deniz Phase 2 taken on 17 December 2013, what some have called the "great pipeline race" has come to an end. By late 2018, the first natural gas will be delivered to Georgia and Turkey from Azerbaijan. About a year later 10 bcm of gas will be flowing into Europe, by 2019. The companies involved have said that a total of 23 bcm of natural gas would be available for export in 2023 and 31 bcm in 2026.

28. In 1999, the Shah Deniz field was discovered about 70 km off the coast from Baku. Azerbaijan has always been an important oil producer, but with the discovery of the Shah Deniz



field the country is set to become an important gas producer as well, since it is one of the largest gas condensate fields in the world. The first pipeline to transport gas from Azerbaijan to Europe through an alternative route is the Interconnector Turkey-Greece (ITG), which has been operational since 2007. The gas flowing through the ITG is supplied from the South Caucasus Pipeline (SCP), which runs from Baku via Tbilisi to Erzurum. Via the SCP, up to 7 bcm of gas from Azerbaijan reach Turkey and then approximately 1 bcm is further transported to the EU via ITG. These projects thus enhance the EU's energy supply security by contributing to the EU's efforts to diversify energy sources and routes.

29. To access the full potential of the Shah Deniz field, new infrastructures need to be constructed. Since the field's discovery, but especially since the Southern Gas Corridor Project was launched, a handful of pipeline schemes have competed to deliver the first gas from the Shah Deniz Phase 2 development. In 2013, final investment decisions were taken by the Shah Deniz consortium, which currently consists of BP, the Turkish Petroleum Co-operation (TPAO), Azerbaijan's SOCAR, Petronas, the Russian company LUKOIL and a Swiss-based subsidiary of the National Iranian Oil Company (NIOC).

30. Initial talks on the Nabucco Pipeline started in 2002. The proposed route was to take gas from Erzurum, Turkey, through Bulgaria, Romania, and Hungary to Baumgarten, Austria. For a long time, Nabucco was seen as a front runner in the race for a pipeline for Shah Deniz Phase 2 gas, since all countries involved supported the project. Intergovernmental and project support agreements were signed in 2009 and 2011 respectively.

31. The decrease in gas demand forecasts in Europe due to the economic crisis as well as the uncertainties in terms of gas supplier countries had a negative effect on the Nabucco project. As the Nabucco efforts stalled, Azerbaijan and Turkey initiated a new project, called the Trans Anatolian Pipeline (TANAP). The intergovernmental and host government agreement regarding the development of this stand-alone pipeline was signed in mid-2012. TANAP will be a pipeline with a capacity of 32 bcm and will stretch from Turkey's Georgian border to Turkey's Greek border which will ultimately become the backbone of the Southern Gas Corridor.

32. After this initiative by Turkey and Azerbaijan, the Nabucco project was transformed into "Nabucco West" which was planned to start from the Turkey-Bulgaria border and reach Baumgarten in Austria. At this stage, the Shah Deniz Consortium eliminated the other alternatives (including the Interconnector Greece-Italy Poseidon (IGI Poseidon), South East Europe Pipeline (SEEP), and the Whitestream Pipeline). The Trans-Adriatic Pipeline (TAP) and Nabucco West were competitors for first deliveries from Shah Deniz Phase 2 and ultimately became the last two projects left in the competition. In June 2013, the Shah Deniz Consortium selected the Trans-Adriatic Pipeline (TAP) to carry gas from Azerbaijan to Europe beyond TANAP.

33. The planning for TAP began in 2003. Two possible routes were initially proposed: a northern route from Bulgaria through the Former Yugoslav Republic of Macedonia\* and Albania to Italy and a southern route through Greece and Albania. Analysis revealed that the southern route was more feasible. TAP gained traction after the launch of the Southern Gas Corridor Project when bigger companies took stakes in it. Currently, BP (20%), SOCAR (20%), Statoil (20%), the Belgium-based company Fluxys (19%), Spanish-based Enagas (16%), and Swiss-based Axpo (5%) make up the TAP consortium.

34. The Nabucco West consortium still believes that, in the future, Nabucco West can carry gas from Azerbaijan. Currently, the consortium behind Nabucco West consists of Turkey's BOTAŞ, Bulgaria's BEH, Hungarian FGZS, Austria's OMV, Romania's Transgaz, and GDF Suez. Indeed, a

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\* Turkey recognises the Republic of Macedonia with its constitutional name.

gas pipeline from Bulgaria to Austria via Romania and Hungary is still considered a PCI and could thus be re-launched if more gas becomes available. However, in the absence of new natural gas discoveries, most observers believe that it will be difficult for the Nabucco West consortium to win gas deliveries Azerbaijan, as TANAP and TAP can be scaled up.

35. The decision in favour of TAP has drawn some criticism from several of the countries through which Nabucco West should have run. One reason is that gas will enter the Italian market and not the Eastern European market, which is much more dependent on a sole source. However, others point out that in an interconnected market it matters less where the gas enters the European market. Furthermore, the TAP consortium is working on connecting TAP with Bulgaria through the Interconnector Greece-Bulgaria (ICGB), a 3 to 5 bcm pipeline. Indeed, the TAP and ICGB consortia signed a memorandum of understanding and cooperation in early 2014 to work together to realize the ICGB.

36. Today, TANAP and TAP do not fully address the EU issues of gas supply security. The projects depend solely on Shah Deniz Phase 2 production and the 10-bcm supply for European markets represents only a small fraction of the total European demand. However, TANAP and TAP are important first steps. Both pipelines are scalable and will be able to host future gas supplies for Europe. Indeed, the existence of such infrastructures provides incentives to other resource-rich countries in the Caspian Sea region, the Mediterranean Basin, and the Middle East to export to European markets.

### **C. TURKMENISTAN**

37. Turkmenistan boasts several of the world's largest gas fields and is currently ranked as the country with the fourth largest gas reserves in the world (BP, 2014). Turkmenistan had proven natural gas reserves of 17.5 tcm in 2013, i.e. 9.4% of the world total (BP, 2014). The country has been able to export most of its natural gas production as its annual production level is much higher at 62.3 bcm than its annual consumption level of 22.3 bcm (BP, 2014).

38. The EU is keen to import significant amounts of gas from Turkmenistan. Since 2011, the EC has been tasked to negotiate a treaty between the EU, Azerbaijan, and Turkmenistan to build a Trans-Caspian Pipeline (TCP). It would provide a route to Europe by linking up with SCP, TANAP, and TAP, and could potentially supply 30 bcm per year. TANAP has been designed in such a way that it will not be restricted to Shah Deniz gas and could also transport Turkmen gas in the future. Recently, the likelihood of progress on TCP has increased, as Turkmenistan shows interest in the project, but it is waiting for signals from the new EC at this point. The unresolved legal status of the Caspian Sea and associated maritime delimitation problems could affect the progress of the project. Iran and Russia contend that all littoral states need to agree that such a pipeline can be built, whereas Azerbaijan and Turkmenistan argue that their mutual agreement alone would suffice.

39. At the September 2014 Caspian Summit, the leaders of the five littoral states signed a joint political declaration (which has not been made public) that sets out basic principles on the legal status of the Caspian Sea. All leaders agreed that good progress had been made, and the Russian and Kazakh Presidents even called the meeting a breakthrough regarding the disputes that have arisen after the collapse of the Soviet Union. According to media reports, the states want to draw national borders at 15 nautical miles, extending the zone for another 10 nautical miles for fishing. The remainder will be considered "free areas". Furthermore, they agreed that exploitation of the seabed and subsoil resources would be regulated by the principles and norms of international law and with agreement between concerned parties. This could lead one to suspect that the Iranian and Russian position on the TCP has been strengthened. However, the President of Turkmenistan once again underlined that "the construction of such pipelines is the sovereign right of States on

whose territory [seabed] they pass, and therefore it can only be done with their consent.” It is unclear how this statement fits in with the “free area” principle.

40. After the Caspian Summit, the Russian President was confident that the littoral states could agree on a convention on the legal status of the Caspian Sea by the next summit, tentatively scheduled for 2016. Outside experts are sceptical of this assertion. Many of these experts also argue that Russia will do its utmost to obstruct the construction of the TCP. President Putin’s push for a North-South Corridor to transport Caspian natural oil and gas resources to Europe through the Russian pipeline system should be seen in this light. Such a corridor would provide Europe with new sources and halve the shipping distance, according to President Putin. More importantly, however, this would not constitute a new route, as Russia would control the pipeline network, making it undesirable from a European energy security standpoint.

41. Other options to bring gas from Turkmenistan to Europe which would avoid the need for the TCP or transport through Russia have also been discussed, including an LNG facility on the Caspian shore, from where gas could be shipped to Azerbaijan, or piping the gas to Iran’s infrastructure from where it could be exported to Europe should the right political conditions emerge. Another alternative is the direct connection of Azerbaijan’s and Turkmenistan’s offshore fields, obviating the need for a standalone pipeline project. This project can be implemented in subsequent phases. In the first phase, the offshore fields of Azerbaijan and Turkmenistan can be linked through an interconnector.

42. Several other factors further complicate the prospect of export westwards. For one, Turkmenistan has recently focused on export to the Middle East and Asia, especially China, Iran, and eventually India. Exporting eastwards is attractive because of strong growth in demand as well as the comparative ease of transportation and infrastructure construction. In addition, Turkmenistan has struggled to develop its gas fields. Indeed, a lack of adequate gas infrastructure and technical capabilities is likely to limit substantial gas export availability for new customers in the short term. European countries and the EU thus need to increase their political commitment and incentives to Turkmenistan to facilitate the import of natural gas from the country.

#### **D. IRAN**

43. In theory, natural gas exports from Iran to Europe carry large energy potential and if realised could even “change the game”. However, the political disagreements with the international community regarding the nuclear programme of Iran would need to be solved before any exports to European markets would become feasible. In 2013, Iran held the world’s largest natural gas reserves at 33.8 tcm, having lately overtaken Russia, and was the third largest producer, with 166.6 bcm (BP, 2014.). Of course, international sanctions and the lack of foreign investment and technology affect the natural gas sector profoundly, as the development of its fields has been hampered by a combination of financing, technical, and contractual issues. Furthermore, in 2013, Iran consumed 166.2 bcm, i.e. almost as much as its entire production (BP, 2014). Indeed, it relies heavily on Turkmenistan for gas exports during the winter months. A sizeable amount of gas is re-injected to increase crude oil production.

44. The backbone of the domestic pipeline system is the Iranian Gas Trunkline (IGAT), which transports natural gas from processing plants to end-use consumers. IGAT supports Iranian gas exports to Armenia, Azerbaijan, and Turkey, the largest importer of Iranian gas at 95%. Exports to Turkey account for about 7 bcm per year (US Energy Information Administration, 2013b). Linking this gas supply chain to Europe through the proposed Iran-Turkey-Europe Pipeline (or, less likely, through a pipeline through Iraq and Syria) carries the most potential for natural gas imports into Europe. Estimates suggest that the Iran-Turkey-Europe Pipeline is designed to carry 37 to 40 bcm of natural gas annually (Reuters, 2011).

45. If a nuclear deal could be struck between the permanent members of the UN Security Council and Germany (the “P5+1”) and Iran in the ongoing negotiations which started at the end of 2013, this may enable the necessary development of the natural gas sector for exports. By 2021/2022, the country wants to stand ready to export 80 bcm of gas to Asia and Europe (Fashtami, 2014). Indeed, Iranian officials are already lobbying European countries for potential gas deals if a nuclear deal can be achieved. By some accounts, European companies are interested in such deals. Independent energy experts, however, caution that this scenario will not come to fruition. For one, large sums of money need to be invested. Currently, the Iranian government is looking for USD 15 billion for gas infrastructure investments (Eqbali, 2014). Even if Iran can increase gas production substantially, increasing demand for domestic power production and the more lucrative use of the gas in increasing the output of its aging oil fields will likely prohibit Iran from exporting in the short term (Oil and Gas News, 2014). Furthermore, countries that have existing gas agreements, like Iraq, Pakistan, Oman, and Turkey are likely to receive more gas before any new customers would. Lastly, Iranian infrastructure projects are often far behind schedule.

## **E. IRAQ**

46. Another country whose natural gas resources could link up with the Southern Gas Corridor in the future is Iraq. Iraq’s proven reserves of conventional natural gas amount to about 1.9% of the world total, Iraq ranking at number 12 among global reserve holders (BP, 2014). However, at this point about 70% of the country’s reserves are connected with its oil fields (IFP Energies nouvelles, 2011). Iraq’s gas production is expected to increase significantly over the next generation, from less than 10 bcm in 2010 to almost 90 bcm by 2035 (International Energy Agency, 2012b). However, the majority of Iraqi natural gas production is flared off. Indeed, the resulting losses have exceeded 60% of production in some months due to a lack of sufficient pipelines and other infrastructure to transport it for consumption and export (US Energy Information Administration, 2013b). Iraq aims to become an exporter of natural gas but the government’s short term goal is to utilise its natural gas resources and support economic development, with the power sector a strong priority for gas use, followed by domestic industry.

47. Iraq’s current gas strategy and the political situation in the country dim the prospects for export to Europe and indeed the world. However, in July 2009, former Prime Minister Nouri al-Maliki suggested that Iraq could export about 15 bcm per year to Europe by 2015 (US Energy Information Administration, 2013b), if the current gas shortages for domestic consumption were met. Needless to say, this will not happen by 2015, but it gives an indication about Iraq’s potential as an energy supplier. To further these endeavours, in 2010 the EU and Iraq signed a MOU in order to develop Iraqi gas projects and potentially turn Iraq into a key gas supplier. Particularly the Iraqi Kurdistan region could be a valuable source of gas to the Southern Gas Corridor, thanks to its relatively close location to the planned TANAP pipeline and its enormous natural gas reserves, estimated between 3 and 6 tcm (Tagliapietra, 2014).

48. Iraq’s ability to fulfil its gas ambitions and potential is strongly linked to its domestic political disputes. Enactment of legislation in relation to the management of the hydrocarbon resources and the sharing of revenues is crucial for the development and functioning of the Iraqi energy sector. This affects the needed restoration and upgrading of Iraq’s energy infrastructure, which is of strategic importance. Currently, the federal government of Iraq and the Regional Government of Kurdistan (KRG) are trying to agree on the principles of revenue sharing as well as oil exports. For the smooth operation of the Iraqi energy sector, the parties will have to agree on a federal hydrocarbon law to manage the country’s vast natural resources.. The ongoing disagreements between the parties are causing delays in the development of gas infrastructure in Iraqi Kurdistan. The issue needs to be resolved as improving the present infrastructure in Kurdistan is essential for developing export pipelines to Europe.

49. Iraq's political and economic situation has become even more uncertain in light of the recent threat from the Islamic State of Iraq and Levant (ISIL). This threat will inevitably have an impact on Iraq's role in European energy security in the near future. It has already led many companies to suspend their operations in the Kurdistan Region of Iraq. A substantial international coalition spearheaded by the United States has been leading the fight against ISIL since August 2014. Iraqi energy infrastructure has so far been left untouched from coalition air strikes. Substantial parts of Iraq's energy infrastructure have suffered during the on-going conflict and it will demand large resources and years to rebuild even if the ISIL threat is resolved (Lando et al., 2014). As a matter of fact, due to insufficient investment in energy infrastructure, oil and gas production did not increase to expected levels even before the developments caused by ISIL threat. Although the KRG currently has the highest potential as an energy supply source for Europe, the lack of agreement with the central government, even with the newly formed government, and Iraqi instability might produce new uncertainty.

## **F. THE EASTERN MEDITERRANEAN BASIN**

50. Over the last several years, natural gas discoveries in the Eastern Mediterranean basin have drawn substantial attention. Renewed exploration of the basin began around 2000, because of high gas prices and technological progress in extracting 'ultra-deepwater' resources, which are found more than two kilometres below the sea. The first major discovery of natural gas was made off the shores of Egypt and Israel, prompting intensified efforts by other countries. Exploration has shown that the basin could hold 3.45 tcm of natural gas (US Geological Survey, 2010), and proven reserves currently stand at 515 bcm (US Energy Information Administration, 2013a). The extraction of these resources would contribute to the long-term energy security of littoral states, especially because most of these countries have never held significant energy resources in the past. While these new gas reserves are unlikely to revolutionise global markets or even European markets, they could still substantially strengthen European energy security. The optimal extraction of these reserves faces a host of challenges, including economic, political, and technical challenges. These challenges and possible solutions go beyond the scope of this report.

51. Egypt discovered its first significant 'ultra-deepwater' field in 2004. The field called North East Mediterranean Deepwater is estimated to contain around 42 bcm (Gürel, 2013). The new discoveries added to Egypt's considerable onshore fields and those in the shallower Nile Delta. Currently, the country is estimated to hold about 1.8 tcm of natural gas resources putting it in 17<sup>th</sup> position worldwide (BP, 2014). Egypt enjoyed a steady growth in offshore natural gas production until about 2009 after which offshore production declined. New exploration licenses have recently been awarded, but future prospects still appear unclear. Egypt exported natural gas to Israel through its Arab Gas Pipeline, which connects Egypt, Jordan, Syria, and Lebanon, but these exports were stopped in early 2013, in the wake of the political turmoil gripping Egypt. It also exports natural gas to Asian and European markets in the form of LNG.

52. Israel has been the most active country in the region to search for natural gas. Israel is a country with very few fossil fuel resources, but with very high energy demands and limited import possibilities, given the non-recognition of the state by many important supplier countries. The country has therefore conducted offshore exploration since the 1960s. It discovered its first small, but viable, natural gas fields in 1999 and 2000. Several other fields were discovered subsequently, but the real turning point was the discovery of the Leviathan field in 2010. Leviathan is believed to hold around 620 bcm (World Gas Intelligence, 2014). The newly discovered resources will make Israel energy independent in terms of natural gas for at least a generation and turn the country into a natural gas exporter. Analysts believe that there could be potential gas resources of 920 bcm to 1.3 tcm in Israel's offshore, and proven reserves currently stand at around 300 bcm (Sandler, 2013; Gürel, 2013).

53. In Israel, a substantial debate took place about whether to export natural gas at all, given Israel's fragile position in the world, and, if the answer was positive, to what extent. However, the government announced that it would export 40% of the gas. The next question for Israel becomes how and where to export its gas. Several options present themselves. The cheapest option for export is almost invariably via pipelines. In Israel's case, the easiest option would be to export to Egypt, Jordan, and the Palestinian Territories. Indeed, letters of intent to export to these countries have been signed. The biggest deal is the recently signed plan to supply 45 bcm to Jordan over a period of 15 years. In Egypt, the gas could also be converted into LNG should Israel desire to export to the world market. Of course, a stable security situation and a better political climate are necessary for exports to its neighbours. Next, a pipeline to Turkey would also be technically and financially feasible. In Turkey, existing and future gas infrastructure, including TANAP, TAP, and a planned LNG plant at Ceyhan, would enable Israel to connect its gas to European networks or to export it into the world market. A tender announced by the partners in Leviathan for the export of natural gas to Turkey ranging from 7 to 10 bcm a year demonstrates their preference to focus on the country as the most feasible route. However, the Turkish government has made clear that this option would depend on an improved political climate between the two countries and, in particular, progress between Israel and the Palestinians. Last, Israel could construct its own LNG facility, in order to be independent from regional markets and export to the world market. Such a facility could be built either onshore or as a floating LNG plant (possibly with foreign partners).

54. In 2000, a British company estimated that two fields called Gaza Marine-1 and Marine-2, located offshore from Gaza, could hold 28 bcm of natural gas. This could make a future Palestinian state energy-independent from Israel. While negotiations to extract these resources started soon thereafter, the company withdrew in 2007 because of political obstacles. The current political situation between Israel and the Palestinians make it difficult to predict if and when the gas will be extracted.

55. Offshore explorations in Lebanon and Syria are in their early stages. The current civil war has halted these efforts in Syria. Lebanon, however, is eager to explore its offshore natural gas reserves, as very preliminary estimates put its resources at around 708 bcm. At this point, however, the political and legal situation makes it very difficult to start exploratory drillings.

56. Turkey has also shifted its exploration focus towards its southern offshore recently, having previously concentrated on its Black Sea offshore for a number of years. TPAO initiated an exploration campaign by acquiring regional 2D and 3D seismic data in various offshore areas from west of Antalya to Mersin and to Iskenderun Bay. By incorporating the seismic data with the data from onshore and previously drilled wells in the region, TPAO is trying to determine the hydrocarbon potential of in Turkey's Mediterranean waters. The exploration campaign is at a stage where it is not yet clear how much natural gas resources could be discovered in the area. However, the acceleration in recent exploration activities would lead to a better estimation of the resources within the next couple of years.

## **VI. CONCLUDING REMARKS: A GLOBAL PERSPECTIVE**

57. The world energy map has dramatically changed over the last several years and is continuously evolving. Ever-changing developments in global energy supply and demand, not only of natural gas, will undoubtedly affect the extraction and potential export of new natural gas resources in Europe's neighbourhood. At this point, the natural gas market is still too dynamic to foresee what these effects will be, but it is instructive to examine the changing energy picture.

58. On the supply side of conventional natural gas, new players have emerged. This report has shown the potential of the Caspian Sea region, the Eastern Mediterranean basin, and Iraq, but other new players are set to enter the fray as well, for example Mozambique, Tanzania, and Myanmar. The Arctic region also holds about 30% of undiscovered conventional natural gas resources (as well as an estimated 13% of the world's undiscovered conventional oil resources) (US Geological Survey, 2008). As five of the eight Arctic countries are members in NATO and three are members in EU, this area should be a field of cooperation between the EU and NATO. In particular, Norway, currently second biggest energy supplier of Europe, should play a key role for European energy security and in decreasing the dependence on Russia.

59. More importantly perhaps, the shale gas revolution in North America has the potential to change the rules of the global energy game. Indeed, shale gas looks like one of the most secure alternative energy sources for European energy security in the eyes of the Rapporteur. The extraction of shale gas has been pioneered in the United States, which possesses the fourth-largest reserve in the world with about 16 tcm (behind China, Argentina, and Algeria) (US Energy Information Administration, 2013f). North America leads the production of shale gas. In 2012, the United States produced about 730 million cubic metres (mcm) of shale gas per day, and Canada followed with around 55 mcm per day (US Energy Information Administration, 2013e). As President Obama has argued, the United States is becoming "the Saudi Arabia of natural gas" (Koebler, 2012). Imports of shale gas from the United States thus present a good option for European energy diversification. Indeed, there are several export infrastructure projects on their way.

60. Some European countries are also looking to explore their own shale gas reserves. In addition to Poland, which is thought to have the largest shale gas reserves in Europe, Lithuania, and Ukraine have granted permits to major energy companies to explore for shale gas. Unproved technically recoverable resources of shale gas in European countries are estimated at around 13.3 tcm (US Energy Information Administration, 2013d). Interestingly, 2.8 tcm of shale gas are thought to be found in Ukraine (US Energy Information Administration, 2013d), especially in the Donetsk and Lugansk region which is largely under separatist control. Shale gas still faces a number of challenges in Europe, however. Several European states have placed moratoria on shale gas development because of environmental and safety concerns. The political discussions on shale gas are very heated all across Europe. Indeed, former NATO Secretary General Anders Fogh Rasmussen apparently stated that Russia was mounting a sophisticated disinformation campaign, aimed at undermining attempts to exploit alternative energy sources in Europe, including shale gas (Harvey, 2014).

61. The new worldwide natural gas sources, whether conventional or shale gas, combined with the evermore maturing LNG technology, could erode geographic barriers between regional gas markets which would lead to decoupling gas from oil prices. Indeed, LNG is becoming a popular alternative for European countries. For example, Lithuania is constructing a LNG terminal near Klaipeda, which is expected to become operational in December 2014. Estonia and Finland are working on a similar bilateral project.

62. Moreover, the potential for increased extraction in traditional supplier countries, for example Algeria, is still large as well. In contrast, the main conventional gas reserves in Europe, in particular

in Norway and the Netherlands, will continue to decrease, and the continuing instability in some of the supplier countries in the Middle East and North Africa could lead to a downward trend on their gas production. Nevertheless, in light of the new reserves that could enter the market in the medium term, there is a danger of oversupply.

63. On the demand side, the rise of the Asian economies, in particular China and India, means that Asia will increasingly compete for new natural gas resources, often offering better deals to supplier countries, for example by financing the construction of the necessary infrastructure. In addition, the Asian markets are often easier to reach for new suppliers, making it cheaper to export to Asian economies. The recent agreement between China and Russia, which will see Russia provide natural gas to China over a 30-year period, a deal worth 400 billion USD worth, is an example of the attractiveness of Asia and will certainly affect the global energy scenarios over the long term. These developments underline the idea that European countries should diversify their gas imports away from Russia.

64. Another factor complicating trends in demand for natural gas in Europe is the drive towards more sustainable economies with greater reliance on renewable energy. Although it is likely that Europe will need increasing amounts of gas for at least a generation to come, technology breakthroughs could reduce the demand for natural gas in the future.

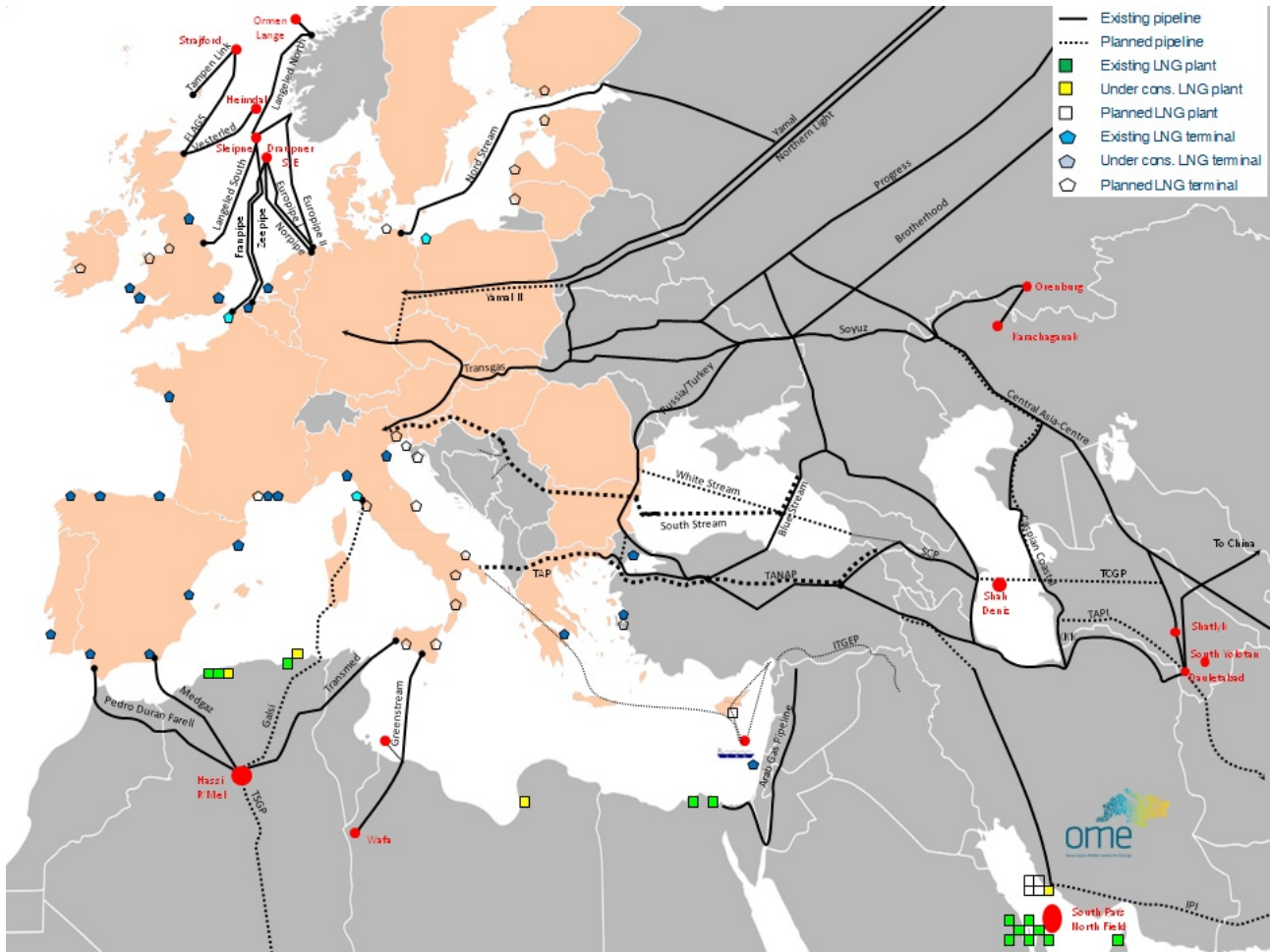
65. It is still unclear what the future holds for nuclear energy in the wake of the Fukushima nuclear accident, as nuclear energy still represents a potential energy source that could make countries independent from fossil fuels. EU countries with major nuclear energy capabilities still consider continuing their nuclear energy programmes. The on-going crisis in Ukraine may contribute to the revival of nuclear energy in some EU countries. Efforts on reversing the trend against nuclear power seem to be politically difficult, however, after Germany's decision to shut down its nuclear plants. However, the Ukraine crisis may be an initial warning to again discuss the future of nuclear power. Of course, nuclear safety is an absolute priority. This is why the EU considers it much more important to accelerate the adoption of the amended nuclear safety directive, reinforcing the independence of nuclear regulators, and providing information to the public and regular peer reviews (European Commission, 2014b).

66. Despite these uncertainties in the world energy market, it is still clear that Europe needs to diversify its natural gas routes, sources, and suppliers. European countries should therefore vigorously pursue their current energy security strategies. For one, the EU should bolster its engagement with third countries on the transit and supply of natural gas. It should increase its political efforts to gain access to the new sources of energy outlined in this report, including through increasing incentives to export to European markets and the facilitation of political climate conducive to co-operation and gas exports. The EU should fully connect its own energy market and interlink its networks with the crucial transit countries and suppliers outside its borders.

67. The Rapporteur would like to stress that in all of these efforts Turkey, an Allied country and a negotiating candidate country for full EU membership, stands ready to contribute to the energy security of Europe, with its geostrategic location as well as political and economic stability. Increasing Europe's energy security strengthens Turkey and indeed the whole Euro-Atlantic community. Turkey, with its unique location and diversified energy portfolio in terms of natural gas, has become the crucial element and a reliable transit country for gaining access to the new natural gas resources in the Caspian Sea region, the Eastern Mediterranean basin, and the Middle East. Furthermore, Turkey can provide the safest, most feasible, and most profitable route of new natural gas to Europe. Turkey also has made important progress in aligning its legislation with the "*acquis communautaire*". The screening of Turkey's energy legislation against the "*acquis communautaire*" has been completed. The prompt opening of this chapter will help implement energy security policies pursued in close collaboration with the EU.



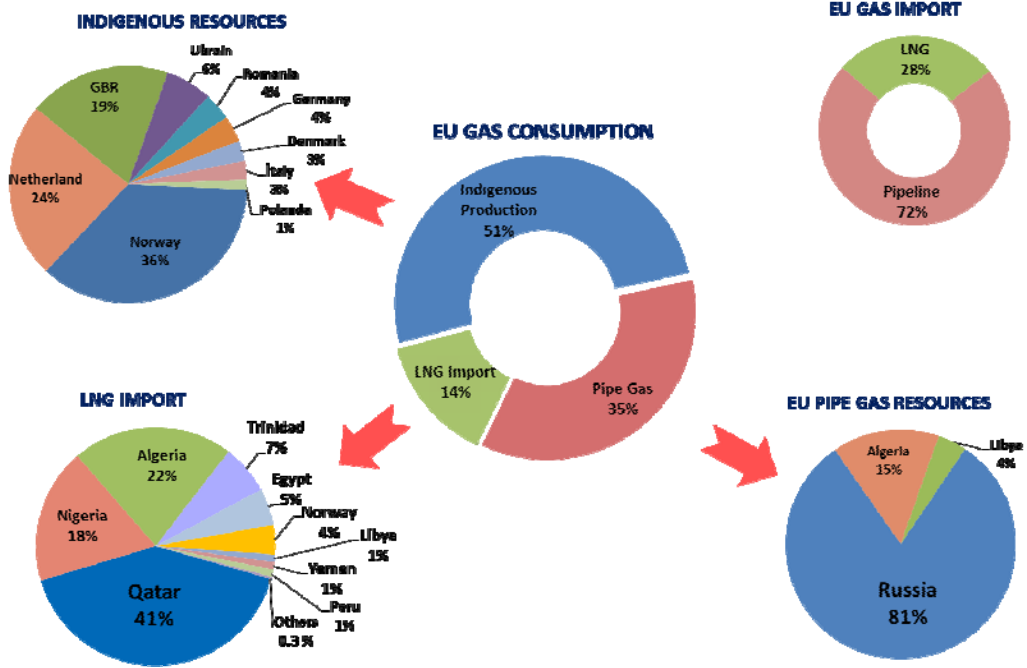
### APPENDIX 1 Existing and Planned Natural Gas Pipelines for Europe



Source: Observatoire méditerranéen de l'Energie

**APPENDIX 2**

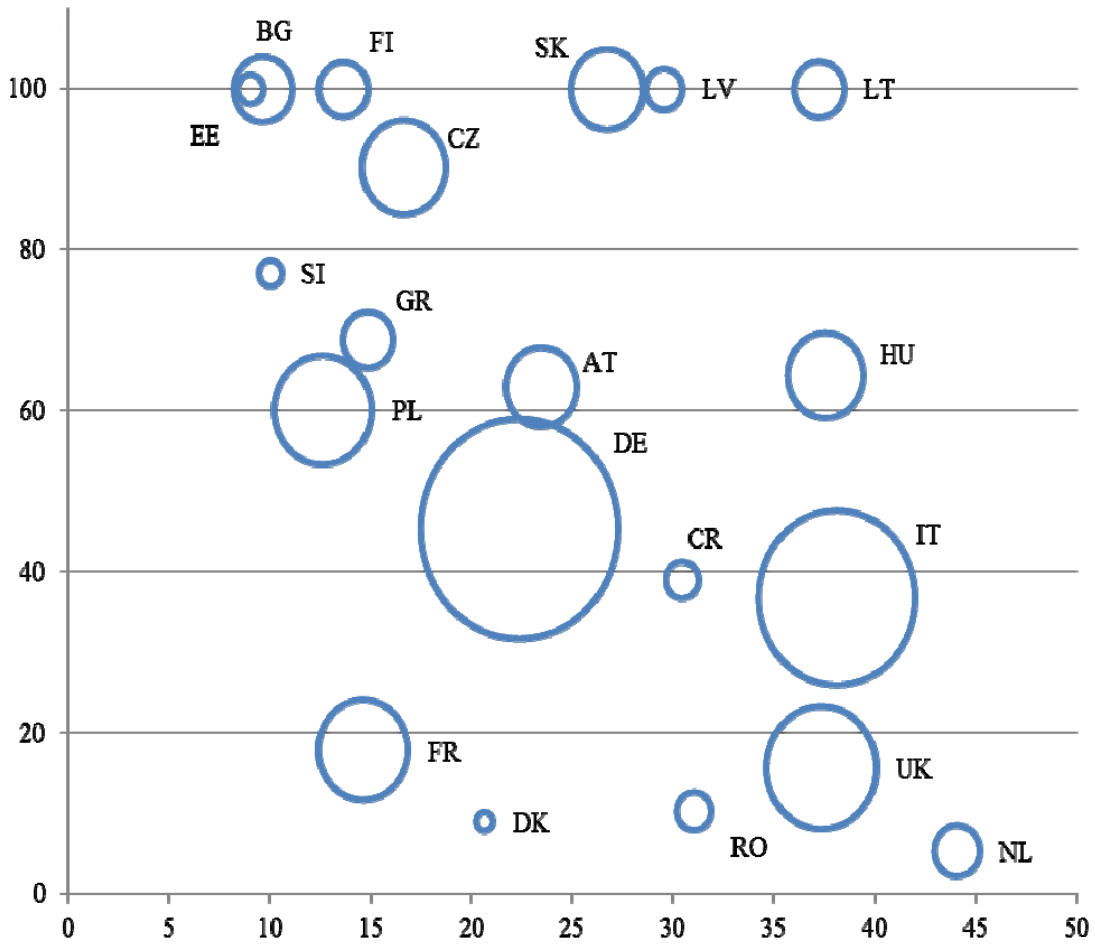
Sources of Natural Gas for Europe



Source: Cedigaz & Oxford Institute for Energy Studies

### APPENDIX 3

#### Dependency of EU countries on Natural Gas Supplies from Russia



Source: European Commission, 2014b

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