

IN-DEPTH ANALYSIS

The EU's energy security made urgent by the Crimean crisis

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Abstract

The crisis in Crimea has led to a first round of sanctions between Russia and the EU – and may well lead to more. For both the EU and Russia, energy constitutes the main risk in this clash, as the two actors are largely interdependent: Russia exports 65 % of its gas to Europe, while the EU imports roughly one third of its natural gas from Russia. Among EU Member States, the level of dependency varies greatly, as does their ability to respond to Russian threats.

Military and political tensions are obliging the EU to boost its energy security mechanisms and to seek out short- and long-term alternatives to Russian gas. The Union's reserves are at present half-full, thanks to a mild winter, although no-one knows what the next winter will bring. Several studies have suggested that in the short term the EU could substitute Algerian, Iranian, Norwegian and Qatari gas for Russian gas, although the price would naturally be higher. Yet the risk of recession is estimated to be lower than was the case in the 1970 oil crisis. Most of the new supply would come via cargo ships, bypassing traditional pipelines, although this will require the rapid creation of new gas terminals.

In the longer term, Azeri, US and Turkmenistan gas supplies may also quench the thirsty European market, depending on commercial and technical conditions. Other energy policies (focusing on renewable sources, greater efficiency, nuclear power, shale gas and the interconnection of the energy grids) can also play a role in reducing – if not completely eliminating – Europe's dependence on Russian gas.



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1 The effects of the Ukrainian crisis on the energy market

The European Council examined the Crimean crisis from the Energy point of view

On 21 March the European Council took note of the rising military tensions with Russia following the Crimean status referendum and the military occupation of Crimea. The problem of energy security was raised in connection with this situation. The Council decided in consequence to intensify efforts to reduce gas energy dependency by enhancing energy efficiency, diversification (via the Southern Corridor and possible gas imports from the USA) and the development of indigenous resources by completing electricity and gas grid interconnections with a view to solidarity interventions in the event of asymmetric shocks. A comprehensive plan to reduce EU energy dependency was requested from the European Commission by June 2014.

As was done at the UE-US summit

At the subsequent EU-US summit held in Brussels on 26 March 2014, while promoting energy cooperation between the parties and pressing for the rapid conclusion of the TTIP, President Obama promised to rescue Europe using the shale gas abundance with which the US is 'blessed'. He did not, however, hide the fact that exporting liquefied natural gas from the US to Europe is not an immediate option: legal, commercial and technical obstacles are delaying this new trend. Instead, he invited European countries to make better use of indigenous resources by lifting environmental bans on shale gas and nuclear.

Mr Putin threat to halt gas deliveries to Ukraine.

On 10 April president Putin sent a letter to the leaders of the 18 EU countries¹ which import gas through Ukraine threatening to discontinue gas supply to this country. He made clear that 'Undoubtedly, this is an extreme measure. We fully realize that this increases the risk of siphoning off natural gas passing through Ukraine's territory and heading to European consumers.'

Energy security calls for greater diversification

In fact, should tension with Russia increase, stronger sanctions may be envisaged at both ends of the pipelines, and gas imports may be put at risk. Dependency is a two-way concept, however: the EU as a whole imports one third of its gas needs from Russia and the latter exports 65 % of its production to the EU. Changing the pattern of trade would be quite difficult for both parties in the short term. Gas differs from oil in one very important way: it is mainly traded through extensive and expensive pipelines, whose cost is generally paid for by long-term contracts. Pipelines are subject to local instability when crossing sovereign countries, as underscored by the Ukrainian gas crises of 2006 and 2009, when Russia gas supplies that flowed through Ukraine to south-western Europe were cut off.

¹ See [Putin threatens Ukraine gas supply in EU letter](#), Financial Times, 10 April 2014

The Crimean crisis is raising the importance of rapid diversification: countries that are completely dependent on Russian imports, especially if they import through Ukraine, are subject to political pressure and to higher gas prices² and this may result in a weakening of the EU's position as a single credible actor vis-à-vis Russia.

The importance of pipelines is in any case progressively declining. A second form of delivery is increasingly taking its place: cargo delivery of liquid natural gas. In 2012 it amounted to 44 % of total imports into the EU but decreased to 45.7 billion cubic meters (bcm) in 2013³ (about 9 % on EU total gas import). LNG proved, however, to be cheaper on average in the first half of 2013.

The need for completion
of gas grid
interconnections

But LNG requires huge investment: natural gas needs to be liquefied using a costly, energy-consuming process in export terminals, to be built by exporting countries. Conversely, the EU needs to equip itself with import terminals⁴ and with an adequate network of internal pipelines to bring gas from the coast to landlocked countries. Spain has 38 % of LNG import capacity and can provide concrete help to the EU with an increase of 14 bcm. A third pipeline connection with France needs to be completed soon.

An extensive and
increasing pipeline
network boosts EU
dependency on Russia

The internal, interconnected pipeline system is expected to be completed by the end of 2015, as requested by the March European Council. So far a number of obstacles linked to technical problems and the jealousy of Member States when it comes to energy sources and strategic connections have stood in the way of this happening. In a situation of rising tension with Russia, interconnection of the gas grid is of the utmost importance: the dependency of EU countries on Russia varies greatly, depending on their proximity to the big neighbour, and eastern EU Member States are the first terminals in a large-scale pipeline network built by the former Soviet Union during the Cold War and extended to western countries after 1991. Not only is this pipeline system impressively extensive, there were also plans – before the Crimean crisis – to increase its capacity with new pipelines projects.

The most important are the highly controversial 'South Stream', which would reach Italian and French markets through Bulgaria, Serbia, Hungary and Slovenia, and the 'Nord Stream' supplementary route (Nord Stream 3 and 4), whereby it was planned to reinforce Germany's direct connection with Russia by an extra capacity of 55 bcm. These new eastward transit lines would bypass Ukraine to the north and the south and avoid the risk of supplies being cut in the event of a Ukrainian crisis, as happened in 2006 and 2009 (see Chapter 3). Should these additional lines be completed, the total export capacity to Europe would be 374 bcm. The idea behind these new pipelines

² The correlation between gas prices and dependency is impressive: for example, in January 2013 the price of gas in Germany, which has both diversification of sources and strong demand, was 24.3 EUR/MWh, while it was 37.9 EUR/MWh in Lithuania and 43.3 in Bulgaria, which respectively depend 100 % and 85.5 % on Russian gas. (Source, European Commission).

³ See [Paying the piper](#). The Economist, January 2014.

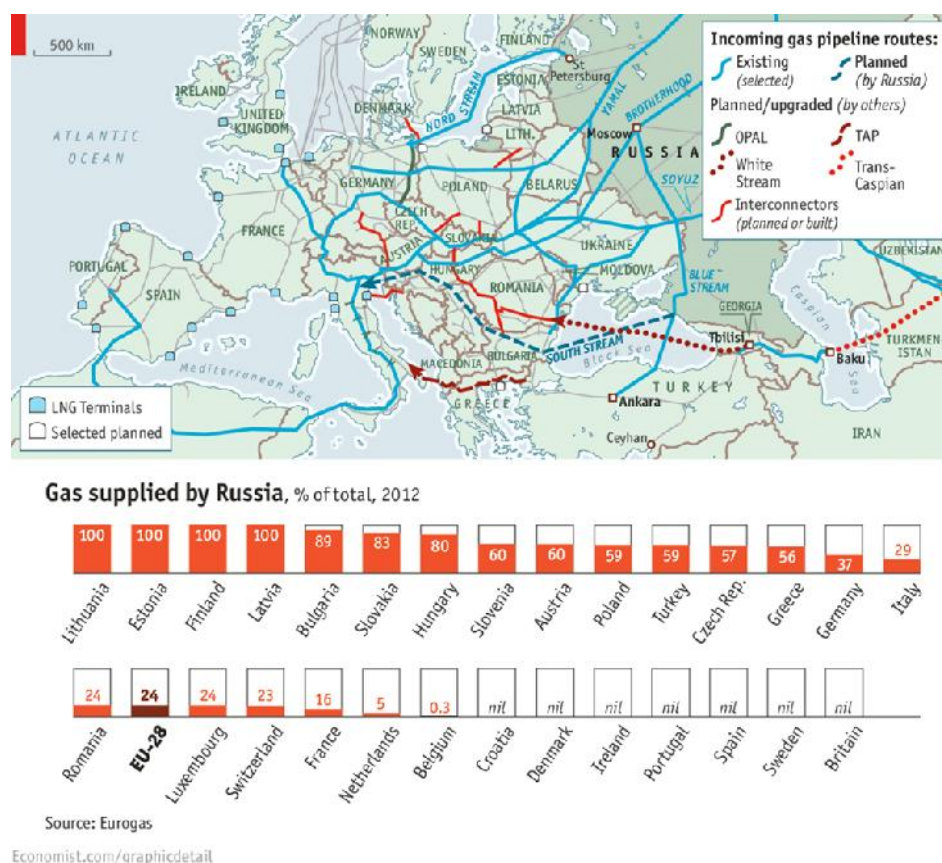
⁴ There are currently 18 operating LNG import terminals in the EU, 5 confirmed projects to be operational by 2015 and 21 potential projects for 2014-2019. Source: [Gas LNG Europe](#).

was to neutralise competitors (especially the Southern Corridor from Azerbaijan) and to discourage EU countries from diversifying through new investment by making Russian gas available at better prices. But their increase dependency on Russia and the Crimea is likely to put South Stream and the doubling of Nord Stream on hold.

This extensive pipeline network is underutilised: its total existing export capacity is currently 256 bcm, while actual gas flow to Europe in 2012 was between 94.6 bcm (according to BP Statistics⁵) and 138.8 bcm (according to Gazprom⁶). It is difficult to know what actual gas exports are; in the case of the statistics cited here, for example, the entities providing the figures (Gazprom and BP) are in a complex competitive relationship that may jeopardise the reliability of their numbers⁷.

In any event, overcapacity is one the reasons that will cause dependency on Russia to increase in the long run, unless the political situation forces the need to find alternative channels, as this study forecasts.

Figure 1:
Major EU pipelines, LNG
terminals and MS
dependency



⁵ See [BP Statistical Review of World Energy](#), June 2013.

⁶ See Gazprom, [Delivery statistics](#), 2014.

⁷ In any case, minimum export quantities, as guaranteed under take-or-pay contracts, are around 140 bcm.

Possible gas shortages
imply different outcomes
in the short and in the
long term

Strategic interests at stake in some Member States have so far prevented the EU from giving Russia a firm answer: sanctions were adopted by the Foreign Affairs Council on 17 March 2014, with the asset freezing and visa ban established for a list of 21 people being largely symbolic.

However, the launching of discussions on energy cooperation with the USA at the summit of 26 March underlines the need for emergency and long-term solutions to meet the EU's thirst for energy in the event of serious gas disruptions resulting from rising international tensions. **In the short term** providing energy to the EU will face several obstacles, linked to the need to build new import terminals for LNG, to find enough spare gas on the spot market (since it is normally supplied under long-term contract), to convert electric plants to other energy sources or to convert home heaters and gas burners. Replacing imports from Russia with gas from Algeria, Norway and Qatar would be theoretically possible, although it would hugely increase the energy bill and probably result in an external shock to the EU economy, with inflation and recession effects.

In the long term, security can be strengthened by completing new pipelines (such as the trans-Adriatic pipeline, which would connect Azerbaijan with Italy), opening and stabilising patterns of trade with new countries such as Iran, reducing energy consumption through appropriate energy efficiency measures, increasing renewable energy production, and 'cleaning' the use of coal from its huge carbon bio-product (using new technologies called 'carbon capture and storage'). In the long run the mirrored dependency of Russia on EU purchases will decrease, since a pipeline connecting Siberian fields with China and a LNG gas terminal in Vladivostok on the Pacific coast are under construction⁸.

After an analysis of EU dependency, alternative sources to the Russian one will be analysed as to their short- and long-term outlook following a 'Ukrainian disruption scenario' (50 % of gas flow from Russia is blocked) and a (very unlikely) 'Russian disruption scenario'. Possible alternatives in the short and the long term, where other policies will appear, will be analysed.

2 The EU and Russia: The extent of dependency

Russia's leading role as the EU's energy supplier is likely to persist in the long term, even if Norway provisionally takes the lead

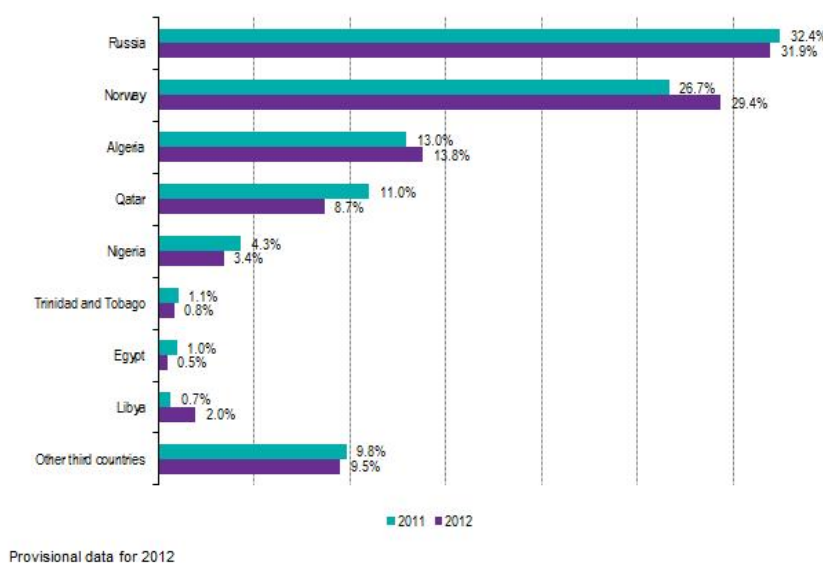
The Russian Federation has been the main exporter of oil, gas and coal to Europe for many years. In 2012 it provided 31.9 % of the EU's gas imports, 31.38 % of its oil imports and 26.7 % of its coal imports⁹. Russia is also the EU's first supplier of uranium: 27 % of the EU's uranium imports originate in Russia¹⁰.

⁸ See: Oil and gas: [Gazprom looks east to restore fortunes as US shale gas booms](#). Financial Times, June 2013.

⁹ Eurostat Statistics and the European Commission Directorate-General for Energy.

¹⁰ European Commission, Euratom Supply Agency, [Annual Report 2012](#), 'Member States' Energy Dependence: An Indicator-Based Assessment, 2013

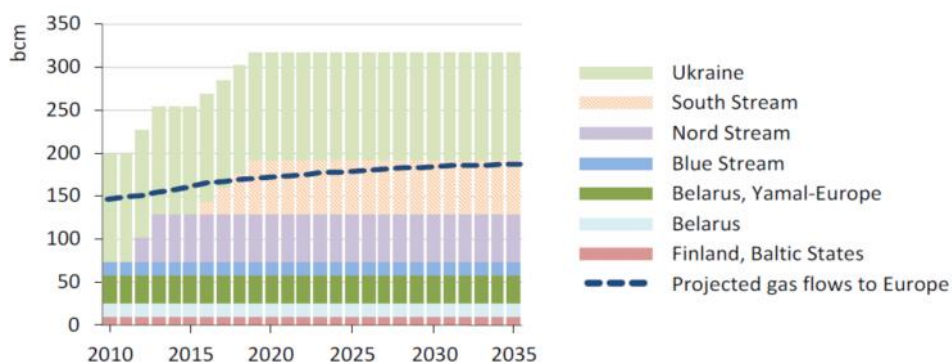
Figure 2:
Gas import in the EU
(2011-12)



Source: [Eurostat](#)

This dependency is expected to increase in the long run with the present policies in force (see figure 2). This is a consequence both of environmental policies and of the extensive pipeline network (see figure 1).

Figure 3:
Projected gas flows from
Russia to the EU and
growth in gas pipeline
capacity



Source: WEO2011, IEA

The dependency of Member States on Russian gas exports varies greatly, as is clear from Figure 1. Some northern and eastern Member States depend on one single Russian supplier, and often on one supply route, for 80-100 % of their natural gas consumption¹¹. Others have a more diversified portfolio of suppliers, which is nevertheless dominated by Russian imports. This is true of Germany, for example, which relied on Russia for almost 40 % of its natural gas consumption in 2012 (and which is Russia's biggest market in the EU). Some Member States, mostly in western Europe, (e.g. the United Kingdom, Ireland, Spain and Portugal) do not import any natural gas from the Russian Federation¹². Russian companies are trying to enter those markets by

European Member States
have different levels of
dependency on Russia...

which has resulted in

¹¹ European Commission, *Energy challenges and policy*, Commission contribution to the European Council of 22 May 2013.

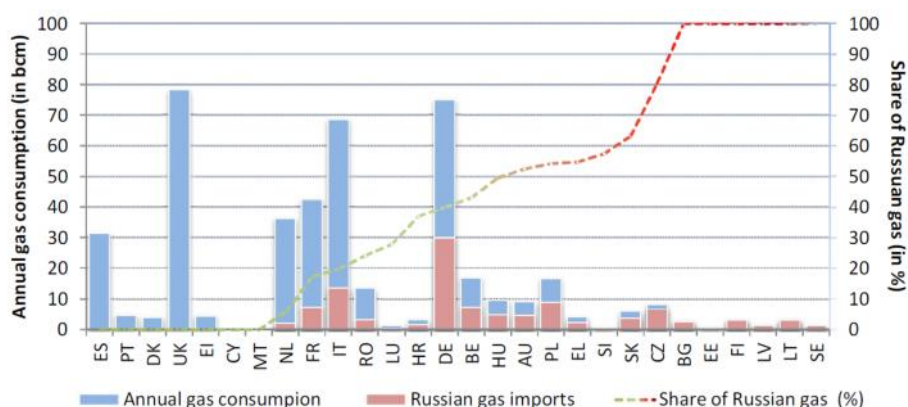
¹² CRS R42405, *Europe's Energy Security: Options and Challenges to Natural Gas Supply Diversification*, 20 August 2013.

different prices.

Figure 4

Russian gas in the context of total gas consumption of the EU-28 (aggregated 2012 data)

exporting liquefied natural gas (LNG) by sea; the first contract with Spain was concluded in October 2013¹³.

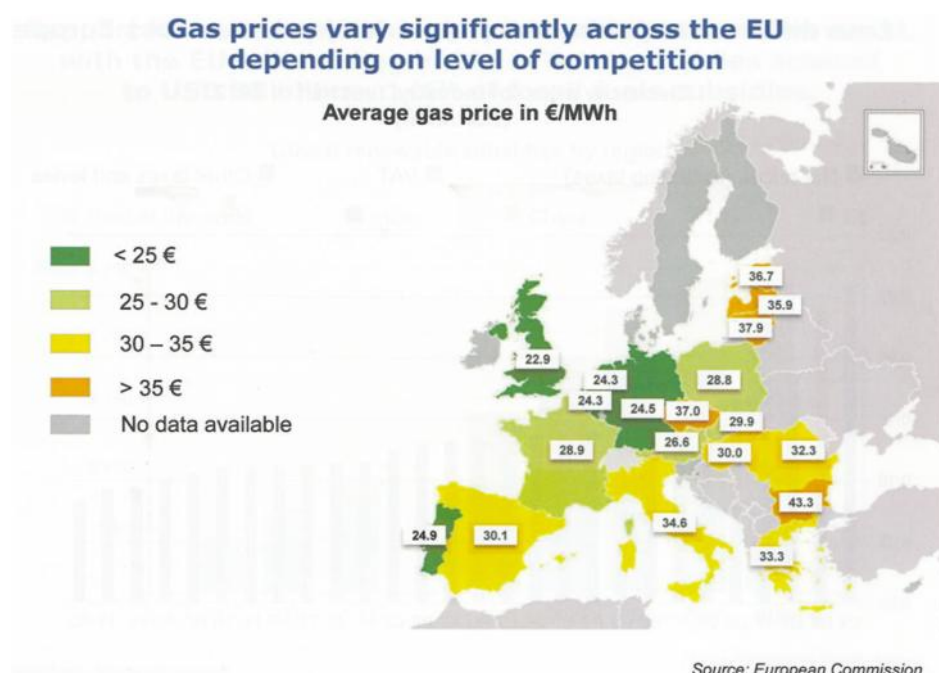


Sources: BP (2013), EIA (2013 and 2014).

This situation allows Gazprom to vary the level of prices, producing a situation of different prices in different Member States. Facts demonstrate that the more they diversify and the greater the volume they consume, the better prices they can negotiate.

Figure 5:

Gas prices per Member State



Source: European Commission

This variable price situation was targeted by the European Commission in an antitrust case launched by Commissioner Almunia in September 2012 against Gazprom¹⁴. The goal of equalising gas prices in the EU is also pursued

¹³ See Reuters, [No point for LNG to rival Gazprom piped exports](#), 1 November 2013.

¹⁴ The case is based on the following factors: (i) market partitioning, meaning that gas price differences between east and west European countries are not always justified by market and tax differences; (ii) barriers to supply diversification, as Gazprom is suspected preventing third parties from using its pipelines¹⁴; and (iii) unfair pricing, since natural gas contracts have linked gas and oil prices.

by the EU by opening and integrating markets and increasing cross-border trade and developing competition¹⁵. The European Council of March 2014 (see Chapter 4) confirmed the objective of completing the internal energy market by 2014 and developing interconnections (with reverse-flow technology) in order to put an end to the isolation of Member States from the European gas and electricity grids by 2015. In addition, the European Commission has attempted to pursue, to a great extent before the Ukrainian crisis, the goal of diversification by means of new routes, new supplier countries and new energy sources. These objectives will be redefined in the report requested by the European Council by June 2014.

3 Two main gas disruption scenarios

In the event of rising tensions with Russia, two scenarios are possible.

3.1 Scenario A: Ukrainian flow disruptions

The Russian pipeline network is subject to local instabilities

Gas trade relations with the EU continue smoothly but Russia cuts or increases the price of gas to Ukraine. This could be motivated by purely commercial reasons, since Ukraine imported huge quantities of gas from Russia in 2013 (50.3 bcm in 2012¹⁶, more than Germany with 40.1 bcm and 28 bcm in 2013¹⁷). The Ukrainian gas company Naftogas is heavily indebted with Gazprom and this is one of the reasons why a gas crisis with Russia could erupt, as it did in 2006 and 2009. Unless a military conflict blows up in eastern Ukraine, Russia is likely to maintain normal trade relations with such an important (and fully dependent) customer, which benefits, for its part, from substantial income from Russian gas transiting through its territory to Europe (USD 3.2 billion in 2011¹⁸).

Recent increase in gas price to Ukraine was justified by Gazprom as contractual retaliation

What recently changed is the price agreement. President Putin and President Yanukovich had agreed a special gas price on 17 December 2013, down from USD 405/ tcm to USD 268.8. This special price was part of the rescue package proposed by Russia for macroeconomic stabilisation, worth USD 15 billion, a loan which easily induced Yanukovich not to sign the Association Agreement with the EU with its incomparably lower promised resources (EUR 610 million). However, the Euromaidan revolution and the change of government induced the Russian government to withdraw the promised loan. This position was quickly mirrored by Gazprom's declaration, on 4 March, of its intention to terminate the gas discount to Ukraine¹⁹. Price was set at USD 485 with an increase of 80.4 %, but Alexsei Miller, CEO of Gazprom, did not

¹⁵ European Commission, Energy challenges and policy, Commission contribution to the European Council of 22 May 2013.

¹⁶ See Oxford Institute for Energy Studies, [What the Ukraine crisis means for gas markets](#), March 2014

¹⁷ See [European energy security. Conscious uncoupling](#), The Economist, 5 April 2014

¹⁸ See M. Hafner, [Russian Strategy on Infrastructure and Gas Flows to Europe](#), Polinares, December 2012.

¹⁹ See [Decision taken to discontinue gas price discount for Ukraine starting from April](#), Gazprom press release 4 March 2014

Gas flow through Ukraine
may be at stake next
winter

mention the political crisis or the change of government in Kiev. He mentioned instead that the December agreement was conditional upon full repayment of the Naftogas debt and the prompt payment of new gas supplies. Ukraine has so far repaid only USD 1 300 billion, roughly 50 % of its debt of USD 2 829 billion.

Subsequent events demonstrate that energy relations between Russia and Ukraine have not yet been completely disrupted by the Crimean crisis (at 4 April at least) and Gazprom has shown a rather positive attitude towards Ukraine by proposing a loan of USD 2-3 billion to continue to pay for its gas imports. Clearly Gazprom do not want to lose such a big customer or to disrupt gas transit from Ukraine.

However, future gas disruption, perhaps when the next winter brings expanded gas needs for Ukraine, cannot be excluded: possibly caused by an unforeseeable military escalation (Russian troops are still lingering around the Ukrainian border, and some Eastern Ukrainian cities have started claiming their independence, as in Crimea²⁰), possibly by a commercial disagreement on gas trade terms, as happened in 2006 and 2009. Should Ukraine not be repaying its debt, Russia could stop supplying gas, but Ukraine could try in return to cover its gas needs from the flow destined for the EU, as happened in the previous crisis.

Alternative routes to the
EU may bypass Ukraine...

At that time the EU was seriously affected. Today only 50 % of Russian gas flow passes through Ukraine - 16 % of the EU consumption²¹. Northern flow has been redirected through Nord Stream and the Yamal pipeline (see Figure 2), so disruption is likely to hit south-eastern Europe. The pipeline designed to bypass Ukraine to the south was criticised and delayed by the European Commission before the Euromaidan revolution²². It is unlikely to be easily completed in the present situation, where the EU is looking rather to diversify Russian imports (as stated on 21 March by European Council President Herman Van Rompuy), and the US sanctions against the de facto annexation of Crimea are likely to block the construction of the Bulgarian part of the pipeline²³.

...but disruption is
unavoidable

This has a counter-effect, though. As per the next figure it is clear that the Russian flow, without South Stream, will continue to be a hostage to bilateral relations between Russia and Ukraine. Should the EU decide to intervene seriously in the bilateral territorial dispute (or even a war) to back Ukrainian stances, it would risk being seriously harmed, unless it follows the latest

²⁰ See The Guardian, [Donetsk activists fortify barricades after police clear Kharkiv protest site](#), 8 April 2014.

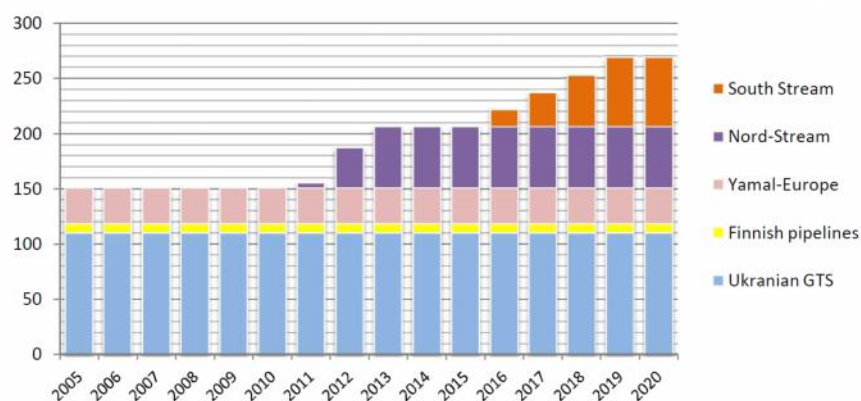
²¹ See [16% of natural gas consumed in Europe flows through Ukraine](#), EIA, 14 March 2014.

²² As declared on 5 December 2013 by the European Commission, South Stream was in breach of the EU's 'Third Energy Package', a legislative package that requires vertically integrated companies in the EU to 'unbundle' production and transport activities. See [Delays to South Stream benefit Ukraine](#), European Parliament, DG External Policies, Policy Department, December 2013.

²³ This is a consequence of the US freezing the assets of the Russian oligarch Timchenko, whose company Stroytransgaz won the tender for the construction of the Bulgarian part of the pipeline. See [South Stream victim of Crimea annexation](#), Euractiv 23 March 2014.

European Council conclusions and achieves a better (and costly) energy security strategy. In fact, Russian gas is today (and will be in the long run) cheaper than other sources, and the policy mix needed to increase security would require strong political will and very quick decisions on huge investments (see Chapter 4).

Figure 6:
Russia's export capacity
to Europe (2005-20)



Data sources: IEA (2012a & 2012b) and the websites of Gazprom (www.gazprom.com) and Naftohaz (www.naftogaz.com).

Spare capacity in Nord
Stream

It should be noted that the Nord Stream, which directly connects Russia and Germany, did not work at full capacity in 2013. Gas flow totalled 30 bcm out of a capacity of 55 bcm. In theory, should the Russian gas flow to Ukraine be discontinued, 25 bcm of gas can still be redirected to supply Ukraine, provided other EU countries directly affected by the Ukrainian disruption, as well as Gazprom, agree (Gazprom CEO Alexei Miller warned that reversed flows would be illegal without the companies' agreement²⁴).

Ukraine needs to reform
its energy sector

But Ukraine in any case needs to reform its energy sector. Its gas consumption is too high, and waste and excessively burdensome subsidies need to be addressed. The sector is completely opaque because of the high level of bribery operated in the past on the gas market²⁵ and the lack of clear measurement of gas flow. Import meters are not in place, leaving room for corruption and parallel gas flows.

This scenario is likely to produce a stronger impact on the countries listed in Figure 7, and the gas quantities needing to be reallocated in this scenario would be some 85 bcm.

²⁴ See Reuters, [Gazprom says 'reverse flow' gas for Ukraine raises legal questions](#), 5 April 2014.

²⁵ See Alan Mayhew, [Energy sector reform in Ukraine, Wider Europe](#), Working Paper 2, 2010.

Table 1

Russian gas imports by
countries via Ukraine
(2013-2012)

	2013	2012
Italy	25.33	15.08
Turkey	13	14.02
Germany	11.71	21
Czech Republic	7.32	7.28
Hungary	6	5.29
Slovakia	5.42	4.19
Austria	5.23	5.22
France	3.21	3.04
Bulgaria	2.76	2.53
Greece	2.63	2.5
Romania	1.19	2.17
Serbia	1.16	0.74
Slovenia	0.54	0.5
Switzerland	0.37	0.3
Bosnia-Herzegovina	0.19	0.26
Macedonia	0.04	0.08
Total	86.1	84.2

Sources: Gazpromexport, Ukrtransgaz, Argus estimates in Argus FSU, 27 February 2014, Defensive measures, p.3

3.2 Scenario B: General flow disruption

If Russia halts gas
deliveries, roughly
155 bcm are needed

Difficult to determine
actual quantities needed:
statistics are not
coherent...

...and quantities will
shrink with higher prices

This scenario is less likely than the previous one but has been analysed by major European think tanks²⁶. In the event of rising military tension arising from an invasion of East Ukraine or other territories with a substantial Russian minority (Moldova, Lithuania, Latvia), especially in the event of an attack on NATO partners, stronger sanctions could easily be envisaged from the EU side. Also logically conceivable would be a Russian threat to discontinue the gas flow in winter, limiting gas flows in the Nord Stream and Yamal pipeline (see Figure 1). This would strongly impact on many EU countries, given the huge quantities imported by some of them (Germany, Italy and Poland) and the total dependency (but with smaller volumes) of others (the three Baltic states, Bulgaria, Slovakia, Hungary). Sweden and Finland²⁷ import small gas quantities exclusively from Russia but they have alternative energy sources.

In this scenario the quantity of gas to reallocate could amount to the total amount exported by Russia, but its magnitude is not clear for several reasons:

- Quantities imported from Russia have been growing in recent years but their precise level is not completely clear since private and EU statistics are divergent. The only statistics for 2013 available at the moment are provided by Gazprom and Wood Mackenzie. 2013 was characterised by a

²⁶ See Georg Zachmann [Can Europe survive without Russian gas?](#) Bruegel Institute, March 2014 and Arno Behrens and Julian Wiczorkiewicz, [Is Europe vulnerable to Russian gas cuts?](#) CEPS, March 2014.

²⁷ Finland is developing a [nuclear project with Russian technology](#). The present situation of tension could endanger it.

A cold 2014-15 winter would heighten the external shock

Gas supply is rigid in the short term and elastic in the long term

particularly harsh winter, which increased gas consumption for heating, and by terrorist attacks on Algerian production plants and pipelines²⁸, favouring Russian exports. Gazprom states that exports to Europe in 2013 amounted to 161.5 bcm²⁹, a large increase compared with 138.8 bcm in the previous year (but in 2011 it was 150 bcm, so 2012 was characterised by an unusual drop in imports). Wood Mackenzie estimates 155 bcm, with 53 % of this gas shipped via Ukraine³⁰, confirming an increase over the previous year. The more objective data from Eurostat have been updated only to 2011. LNG imports (and prices) declined as well, but this is explained by the Asian competition (see Chapter 4).

- Part of the imported gas can be replaced in the short term with other energy sources (coal, oil), depending on industrial and household demand patterns. Part of the demand is set, part is elastic, depending on electric and industrial plants and on house heating and burning appliances. A portion of EU demand will simply shrink as a result of the price rise: the higher costs of rapid substitution will rapidly increase gas costs, especially in the short term. This means that gas consumption will be concentrated on essential production, and energy-intensive industry (steel, chemicals, machinery) could be affected in the short term, especially if the winter of 2014-15 is colder than the one before. This could result in a shock to the whole EU economy, reducing output and raising prices.

In any case a simple policy of replacing gas sources is not an available option. The high price of substituting for gas sources and competing on the market with Asian countries would lead to a contraction of EU gas demand, even in the short term. Other policies to curb consumption would be urgently needed, and even drastic cuts to private heating or to energy-intensive industrial plants would be possible. Some authors³¹ have an optimistic approach and maintain that it would be possible to replace the missing gas quantities in the short run. Others³² are much more cautious and stress that even in the Ukraine disruption scenario, market rigidities and bottlenecks would prevent replacement and generate a severe shock to the EU economy.

As demonstrated in the second chapter, EU dependency on Russia is of such a magnitude that cannot be offset from one day to the next. Russian gas is cheaper and will be cheaper in the long run, and, what is more, it will be easily available because of the pipelines' overcapacity.

Without strong and serious decisions to be taken in the short term, without changing the energy strategy of major players (Germany and Italy), EU dependency on Russia is set to increase in the long run (see Figure 3). All

²⁸ Attacks on gas plants in Algeria took place in 2004, 2011 and 2013. They resulted in decreased production.

²⁹ See <http://www.gazpromexport.ru/en/statistics/>

³⁰ See Ukraine: [Uncovering risks to European and Asian LNG](#), Wood Mackenzie, March 2014.

³¹ See Bruegel 2014 and CEPS 2014.

³² See [European energy security. Conscious uncoupling](#). The Economist, 5 April 2014

other things being equal, the EU use of gas is expected to rise from 327 bcm in 2012 to 413 bcm in 2020³³ as a consequence of the Fukushima nuclear disaster and Germany's abandonment of nuclear power.

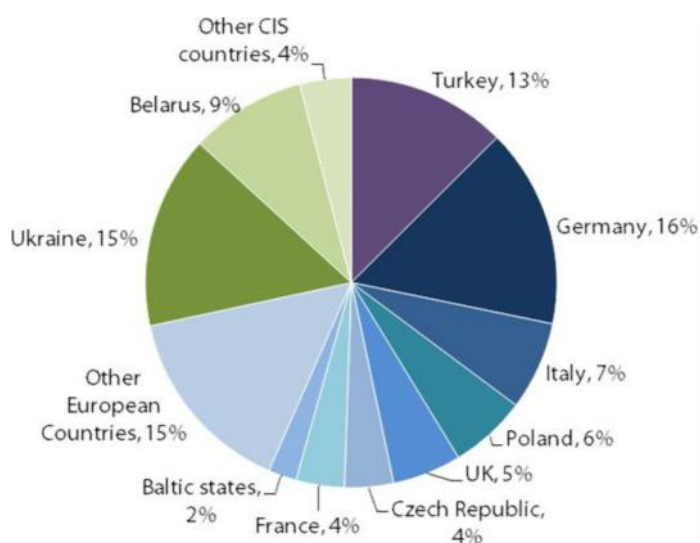
What all studies agree upon, however, is that a scenario of complete stopping of the gas flow from Russia as a consequence of an attack on Ukraine or Moldova or the Baltic states is quite unlikely at the present time (April 2014). Russian exports of oil and gas amount to USD 515 billion and represent 52 % of the federal budget income³⁴, supporting a rather fragile real economy. The largest export market is the EU, not only for gas (see Figure 3) but also for oil.

Russia is also dependent on the EU market

In 2012 Russia exported 47.5 % of its oil and 28.2 % of its gas production. of this, 84 % of the Russian oil and around 81 % of the gas are bound for Europe, highlighting **Russian dependency** on European purchases. Russian exports to Ukraine are also substantial, probably because of inefficient gas use and illegal channelling to neighbouring countries.

In order to limit its dependency on the mature European market, Russia is already trying to diversify its exports and to supply liquefied natural gas to emerging economies in East Asia. The pipeline 'Power of Siberia', which will bring piped gas to the Vladivostok LNG plant, is expected to be ready in 2017 and to cost USD 46 billion – the highest amount ever dedicated to such a project. Its economic viability is only conceivable if a pipeline connecting to China is added. In any case it cannot completely replace the capacity of the extensive network connecting Russia westwards, and China is unlikely to put its industrial security at stake by making long-term investments with a powerful and unpredictable neighbour, though Chinese public opinion may be in favour, given the general discontent over the pollution levels in the country. If Russia loses trust as a reliable trading partner, its economic future is black.

Figure 7 :
Destination of Russian's natural gas exports, 2012



Source: Gazprom

³³ See Oswald, Doerler and Aksath, [The future of European Gas supply](#), AT Kearney, 2011

³⁴ See [Russia Analysis](#), US Energy Information Administration

The energy weapon can be harmful but can be used only once

Russian oil exports could also be affected by an aggression against other ex-Soviet-Union countries. It is true that oil is easier to stock and ship, but international sales need access to the world's financial markets, and Russian companies need to borrow and to be quoted on them. Stronger sanctions on the part of the USA and the UK could severely damage Russian energy sales, and use of gas exports to hurt the EU could turn against Russia. As stated by the Economist³⁵, by using the energy weapon, Russia might win the battle, but would probably lose the war.

The EU today is still undecided; a general disruption of the energy market could finally persuade it to take the irreversible decision to become independent of Russia.

4 Policy mix in the short term

While the European Council has asked the Commission to provide a plan on energy security by June 2014, several studies are suggesting a possible scenario of cut-off of gas flows from Ukraine or even from Russia needing to be addressed in the **short term**. The problem is not simply to find alternative gas sources but also to define a sustainable policy mix for energy, including savings and short-term fuel changes in electricity generation. In the **long run** it is easier to find comprehensive solutions, since the greater part of the technological bottleneck can be addressed, but this requires expensive and bold investment decisions to be taken immediately. With the energy policies currently in force, dependency on Russia – the cheapest gas source at the moment – is forecast to increase.

Analysts propose different short-term solutions, varying from a very positive approach³⁶ to a more cautious one³⁷.

A positive approach: complete energy replacement in the worst-case scenario (complete cut with Russia), with an extra cost to the EU ranging from EUR 3 billion to EUR 20 billion

In the unlikely disaster scenario of rising geopolitical tensions and cross-retaliations which would put at stake all gas flow from Russia, it is theoretically possible for the impressive amount of 130 bcm to be made available. The following table, taken from a study by the Bruegel Institute, suggests not only an increase in imports from Norway and North Africa, but also increased production in the Netherlands, a change in the electricity generation mix, heating from oil, changing fuel in industry and cuts in household consumption. The complete energy mix is able to offset Russian imports entirely, with a cost to Europe ranging from just EUR 3 billion to EUR 20 billion.

³⁵ See [European energy security. Conscious uncoupling](#). The Economist, 5 April 2014

³⁶ See Bruegel, 2014 and CEPS, 2014.

³⁷ See the Economist, 2014.

This study suggests the following options:

- Imports from Norway and North Africa would gain 25 bcm, cost the EU an additional EUR 189 million and represent a loss of EUR 6 629 million for Russia
- Using LNG would gain 3 bcm, cost the EU an additional EUR 4 091 million and represent a loss of EUR 7 955 million for Russia
- Using more LNG (imported at Asian market prices) would gain a total of 60 bcm, cost the EU an additional 12 273 EUR million and represent a loss of EUR 15 909 million for Russia
- Increasing Dutch production at the Groningen depot would gain 20 bcm, represent no replacement cost for the EU and cause a loss of EUR 5 303 million for Russia. However, this idea is opposed by the public in the Netherlands, who are worried by increasing small earthquakes produced by the Groningen field depletion.
- Changing the energy generation mix, switching fuel in industry and seeing household consumption decrease would reduce gas import needs by 75 bcm, would cost the EU EUR 303 million and represent a loss revenue of EUR 19 886 million for Russia.
- Switching to oil for heating would decrease gas imports needs by 10 bcm, cost the EU EUR 3 030 million and represent a revenue loss of EUR 2 652 million for Russia.
- Reducing consumption is another painful but probably unavoidable option in the short term. Households are expected to be forced to lower heating temperatures, and energy-intensive industries (such as steel, aluminium and chemicals) are expected to suspend business during the peak of the energy crisis, so worsening the EU's economic crisis. The simulation suggests that 35 bcm can be gained in this way.

In the **worst-case situation**, the policy mix of using hard-pressed LNG and heat from oil would cost the EU an additional EUR 15 billion from alternative resources and would keep imports of 68 bcm of gas from Russia.

The **best-case situation**, with a policy mix of imports from Norway and North Africa, hard-pressed LNG imports, increased production from the Netherlands, changing the electricity generation mix, switching fuel in industry and decreasing household consumption would cost the EU only EUR 3 billion and would result in full independence from Russia. It is clear that such a forecast, as recognised by the authors, is timely but probably lacking in accuracy.

Table 2
Policy mix for short-term alternatives in the worst-case scenario

Source	Supplementary quantity available - reduction of gas demand (bcm)	Remaining volume of Russian gas to be imported (from total 138 bcm)	Foregone revenues for Russia (EUR million)	Cost relative to Russian GDP (%)	Additional cost of energy replacement for Europe (EUR million)	Additional cost of energy replacement for Europe (% of EU28 GDP)
Imports: Norway	20	118	5 303	0.32	0	0
Imports: North Africa	5	133	1 326	0.08	189	0
Use LNG	30	108	7 955	0.48	4 091	0.03
Use more LNG	60 (30+30)	78	15 909	0.95	12 273	0.09
Production: Netherlands	20	118	5 303	0.32	0	0
Change electricity generation mix	-40	98	10 606	0.64	303	0
Heat from oil	-10	128	2 652	0.16	3 030	0.02
Switch fuel in industry	-15	123	3 977	0.24	0	0
Households decrease consumption	-20	118	5 303	0.32	0	0
TOTAL	190	0	58 334	3.51	19 886	0.14

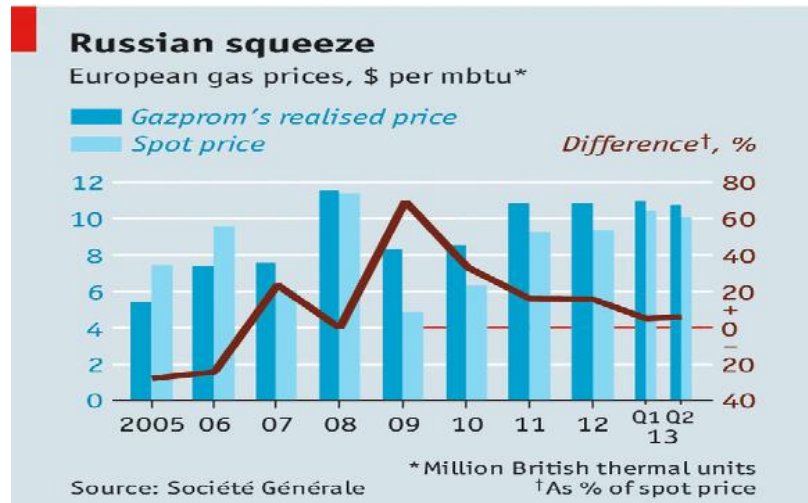
A cautious approach: complete energy replacement in the best-case scenario (complete cutting of the Ukrainian route) cannot be fully implemented

LNG market shows lower prices in the EU but strong Asian competition

A more cautious approach to the short-term solution is taken by another study which looks at the Ukrainian scenario, with a sudden reduction in gas flow of just 80 bcm: in the very short term this does not affect the EU, since its storage capacity is at present half-full (36 bcm) after an unusually mild winter. By next winter, however, the situation is likely to become much worse, and the hypothesis as in the previous study is presented as much less viable:

- Imports from Norway (the most reliable supplier), cannot be increased by more than a mere 10 bcm;
- Imports from Northern Africa prove to be affected by the local instability and show a reduction from the previous year;
- LNG is not such a viable option as presented in the previous chart, even though LNG prices have recently declined.

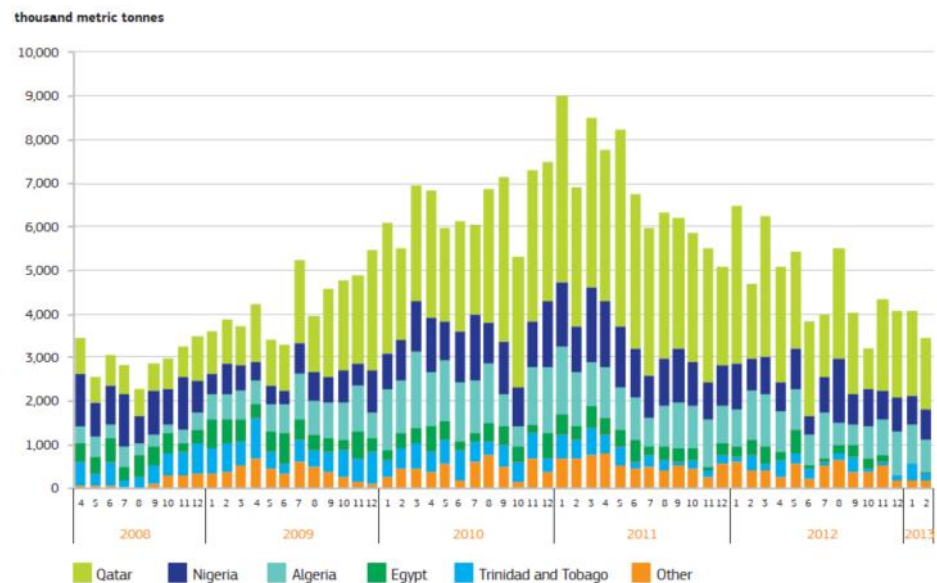
Figure 8:
Gazprom and LNG Prices



Source: *The Economist*, 4 January 2014

This decline in prices has been accompanied by a decline in imports. It seems that demand for gas declined although the winter of 2013 was a particularly cold one.

Figure 9:
LNG imports in the EU



Source: Eurostat COMEXT

The reason for this apparent paradox is probably the fact that the Asian market attracted LNG exports previously aimed at the EU. LNG terminals are among the most expensive energy investments and, once they are built, investors tend to want a rapid return on capital. To this end they make terminals work at their maximum and prefer to sell to Asia, where the price is higher³⁸ owing to the Japanese nuclear decommissioning and the Chinese effort to replace the unbearably polluting coal. Lower gas prices in Europe (thanks to cheap Russian gas) compared with high prices in Asia may explain why LNG imports have declined in recent years. As described above, the EU may well compete with LNG directed at Asia, but it has to pay an appropriate price for it.

Coal plants are running at their maximum

Burning coal for electricity generation is another option, but there is little generating capacity in coal-burning plants at present, owing to the very inexpensive imports from the USA (which is replacing coal with shale gas) and the very low cost of carbon permits in the EU (as a result of the recession, the CO₂ level has decreased even with polluting electricity generation).

The sum of these four options would only yield 50 bcm in the short run. This means that even the Ukrainian disruption (80 bcm) cannot be easily offset in the short term.

Furthermore, **burning oil** in electricity generation plants, where a conversion is an additional possibility. Nevertheless, this oil should come from other sources than Russia, which would be providing higher revenue than gas sales from Russia. Otherwise dependency will be increased.

5 Policy mix in the long term

External shocks require solidarity and a departure from the solely national point of view

In the **long term** other options may be developed. As recalled by President Obama, the EU needs to make its own efforts to guarantee its security, and development of indigenous sources (such as shale gas and a return to nuclear) is needed³⁹. Apart from the opening of new routes and source countries (analysed in the next chapter), the EU is expected to reflect in the long term on the following alternatives:

- Indigenous sources (shale gas, local gas, coal, renewables)
- Interconnection
- Storage capacity
- Energy efficiency

Possible policies to increase security include indigenous resources...

The report by the European Commission expected in June 2014 will provide some indications on the recommended change of energy mix for the EU Member States. Nevertheless, it is worth noting that Member States are free to determine their energy mix and the exploitation conditions of indigenous sources (Art. 194 TFEU). Action at Union level is aimed rather at guaranteeing

³⁸ In 2012 the price of one btu of gas was USD 16.75, while in Germany it was USD 11.03.

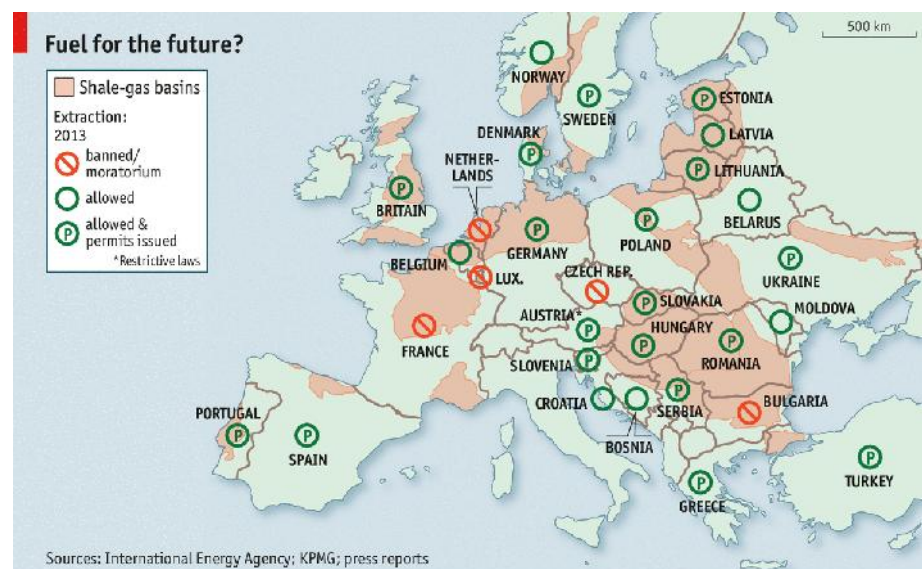
³⁹ See Reuters, [Obama tells EU to do more to cut reliance on Russian gas](#), 26 March 2014.

security, market functioning, interconnection and renewable energy. The problem is that all these actions are now clearly interconnected, and an external energy shock such as the Ukrainian crisis cannot be absorbed other than by joint action based on the solidarity principle. In a situation of international tensions, security reasons should prevail over national interests or short-term economic calculations (for instance, the fact that Russian gas may be cheaper than other options). For this reason the Commission is expected, in its report on energy security, to make recommendations on indigenous sources as well as external ones.

...developing shale gas production in the EU...

The abovementioned Dutch gas field, whose production can be increased by 20 bcm (according to Bruegel study) is facing huge popular opposition. The alternative gas production is the shale gas production, which is concentrated in some countries (see Figure 10) but faces national bans and opposition from the environmentalists in France and Bulgaria. Extraction technology (hydraulic fracturing) is invasive, noisy and probably polluting for the underground water. Total reserves are expected to be around 11 700 bcm, a quarter of the US ones. Analysts expect the EU to produce 4 bcm a year in 2020, a very low figure if compared with US (70 bcm).

Figure10:
Shale gas deposits and extraction permits



Source: *The Economist* 5 April 2014

increasing renewable energy...

Increasing renewables beyond the threshold of 20 % of energy mix by 2020 is still under discussion: the Ukrainian crisis dominated the Europe 2030 discussion on CO2 targets in the European Council of 21 March. It decided nonetheless that:

- support mechanisms for renewables must be based on a more cost-effective and market-based system, and more convergence of national support schemes will be required beyond 2020;
- sustained investment in energy efficiency and demand-side management is required all along the value chain and at the R&D stage.

...promoting gas and electricity grid interconnection

Interconnection of the gas and electricity grids is of the utmost importance. Boosting indigenous energy, LNG terminals and renewables needs an efficient way to redistribute energy to countries in need in the event of external energy shocks. National grids were conceived to avoid

interconnections, since segmentation of national markets guaranteed monopoly prices for national champions. The European Commission has challenged segmentation since 2009, including the aim of reverse gas flow, to be used to equalise prices⁴⁰ and with solidarity purposes in the event of security needs. In fact, interconnection is not yet completed; for example, Poland and the Czech Republic now have a small pipeline (a larger one is planned, starting in 2017), Germany is connected to Italy, Poland and the Czech Republic, and Slovakia has just been connected to Hungary.

Interconnection is explicitly mentioned in the conclusions of the European Council of 21 March 2014⁴¹ as a goal to be achieved in 2015 (it was supposed to be achieved by 2014 but it is still uncompleted). In particular, the Council required Member States to achieve interconnection of at least 10 % of their installed electricity production capacity and asked the Commission for a proposal on interconnection to be put forward by June and to be achieved by 2030. The objective is 'to improve interconnections with the more remote and/or less well connected parts of the single market, including through the improvement and creation of reverse flows, and integrating Member States into the European continental networks'.

Gas storage capacities increase is a key component in ensuring EU energy security in the event of gas flow disruptions. The EU Member States have very different levels of gas storage capacity, as shown in Table 3. The report on energy security expected next June is likely to provide an indication of the additional storage capacity needed.

Table 3:
Gas storage capacity of
Member States, 2013.

Country	Gas storage capacity (bcm)	Country	Gas storage capacity (bcm)
Belgium	0.7	Poland	1.8
Bulgaria	0.650	Portugal	0.179
Czech Republic	2.8	Romania	3.135
Denmark	1	Slovakia	2.8
Estonia	0	Slovenia	0
Finland	none	Spain	4.367
France	13.97	Sweden	0.01
Germany	20	United Kingdom	4.3
Greece	/	Austria	7.5
Hungary	5.13	Ireland	0.2
Italy	15.6	Malta	ND
Latvia	4.47	Cyprus	ND
Lithuania	none	Croatia ⁴²	0.53
Luxembourg	0		
Netherlands	5.2		

Source: [European Commission](#).

⁴⁰ See Figure 5. Gas prices vary widely, ranging from EUR 34.2/megawatt-hour (MWh) in Latvia to EUR 41.9/MWh in Bulgaria. Figures provided by the European Commission (May 2013) show that border prices for gas imports to countries such as the United Kingdom, Germany and Belgium are on average well below (by about 35 %) prices for gas imports in countries that depend on a limited number of suppliers, such as Bulgaria or Lithuania.

⁴¹ See [European Council conclusions](#), 21 March 2014.

⁴² See [Gas Infrastructure Europe](#), 2013.

Energy efficiency is being actively pursued by the EU and represents another tool with which to fight EU gas dependency. This aspect will not be dealt with in this study, and the Commission is expected to provide further guidance on efficiency targets in its report expected in June.

6 Alternatives to Russia: A breakdown per country

6.1 The USA: High hopes facing a more nuanced reality

The EU imported 0.15 bcm of gas from the USA in 2012.

Overview of the country's gas sector and capacities

The US has traditionally been a gas importer rather than an exporter.

In 2012 the US total production of dry natural gas was 708.62 bcm/y and its total exports of dry natural gas amounted to 45.33 bcm/y. Natural gas is both imported and exported by the US, but so far imports have exceeded exports. The situation is expected to be reversed by 2020 with the expected achievement of self-sufficiency in gas, turning the country into a net exporter.

The USA's lack of LNG export infrastructure

A short-term perspective

The USA cannot constitute an alternative to Russian gas in the short term. The first obstacle is the lack of infrastructure: there are no LNG export facilities at the moment in the country. The US energy strategy has put the emphasis on exploiting its shale gas resources for industrial production (the so-called 'Shale gas revolution') and the development of LNG exports has not been a priority so far. US Secretary of State Kerry stated during the EU-US Energy Council of 2 April 2014 that Europeans should not expect LNG exports from them until 2015. Indeed, the first LNG export terminal will not open until 2015 (Sabine Pass, capacity of 22.7 bcm/y).

US law prohibits gas exports to countries that do not have an FTA in force with the US

TTIP negotiations have taken a crucial turn since the Crimean crisis

Another obstacle is legal: a law of 1938 prevents export of natural gas if this threatens national security conditions⁴³. At the same time it establishes that national interest is self-verified when a country has an FTA in force with the US, see for example NAFTA countries. The EU has not signed such an agreement with the US, making it difficult to import from the USA (should US facilities allow it). However, negotiation of the TTIP (transatlantic trade and investment partnership) is progressing, and the EU-US summit of 26 March pressed for its rapid conclusion. Even without the TTIP in force, exceptions can already be granted by the US Administration. However, so far an authorisation has been granted only for exporting LNG to non-FTA countries⁴⁴. Furthermore, the export licences granted by the US government will not directly target for European markets: instead they authorise the placing of gas on the open market. The only facility currently being physically

The US is developing its LNG export capacities significantly

⁴³ A similar provision applies to oil and coal. The Energy Policy and Conservation Act of 1975 require a licence aimed at verifying several conditions, the first being the national interest. So far coal exports have never been blocked.

⁴⁴ To Sabine Pass-Cheniére (Louisiana), for 22.7 bcm/y.

built is in Louisiana. In 2017 it will produce LNG equal to a sixth of EU consumption, but half has already been reserved by India and South Korea, half by UK and Spanish companies⁴⁵.

In this context and since the Crimean crisis TTIP negotiations have taken a crucial turn, as its signing would allow the EU to import American gas more easily, once infrastructure is operational.

But volumes are unlikely to be sufficient for European demand

LNG exports to Asia are more profitable

The long-term outlook

The long-term perspective is more promising. There are currently 23 applications for constructing LNG export plants pending in the US, and so far six export projects have been authorised. The country's LNG capacities could reach up to 66 bcm by 2018-2020. By then the EU will most probably have signed an FTA with the US, allowing Europeans to import American gas.

At the same time, the Senate's Energy Committee is currently working on a series of LNG-related bills which are intended to achieve alternative goals. The 'Expedited Liquid Natural Gas for American Allies Act' of 2013⁴⁶ would allow easier authorisation to export LNG to non-FTA partners of the US, notably NATO members, Japan and any other foreign country where gas exports may promote wider US security interests.

Nonetheless, US gas export prospects are limited in terms of making a significant contribution to EU energy security. Firstly, US LNG exports would primarily go to Asian markets, where prices are higher than in Europe⁴⁷, making them more profitable. European demand for LNG is also expected to rise sharply (42 %) in the next 10 years, up to 113 bcm⁴⁸ – the potential US LNG contribution in that context would not represent a significant portion of EU demand. The development of LNG export facilities should not be taken for granted, as this strategy faces domestic opposition. Some voices are raised in concern that Europeans may change its mind and decide to switch back to cheap Russian gas, causing investment losses for the US. An industrial lobby composed of steel and aluminium manufacturers (industries that are among the most intensive consumers of energy) is in favour of keeping wider gas production only for domestic use, in the hope of promoting a sort of industrial renaissance. Concerns have also been raised over the possible increase in domestic gas prices should the US engage in a gas export strategy.

The USA will not be a game changer for EU energy security

In short, the USA cannot constitute an alternative gas supplier for Europe in the short term, mainly because of the lack of LNG export terminals. The long-term outlook is more promising, as US LNG export capacities are expected to rise significantly in the next decade. Nonetheless, the share of US LNG that could respond to European demand is not significant enough to be a game changer for EU energy security.

⁴⁵ See [U.S. Gas Tantalizes Europe, but It's Not a Quick Fix](#). The New York Times, 7 April 2014.

⁴⁶ Proposed bill S 192 of 2013.

⁴⁷ In 2012 the price of one btu of gas was USD 16.75, while in Germany it was USD 11.03. (CEPS, 2014)

⁴⁸ See AT Kearney. [The Future of the European gas supply](#). December 2011.

6.2 Iran: Encouraging potential in the long run

The European Union does not import gas from Iran.

Overview of the country's gas sector and capacities

Iran possesses the world's second-largest proven gas reserves after Russia

Iran possesses 15.8 % of world's total gas reserves. This represents the world's second-largest reserves after Russia⁴⁹. South Pars, North Pars and Kish are the country's main natural gas fields; they are situated offshore in the Persian Gulf. In 2012 Iran produced 160 bcm of natural gas. The same year the country's total production of dry natural gas was 158 bcm, while it exported 9.13 bcm⁵⁰.

Lack of infrastructure and current international sanctions are the main obstacles in the short term

A short-term perspective

The lack of infrastructures and the current international sanctions against the country represent the main obstacles to Iran's being a reliable short-term alternative to Russian gas.

Though Iran's total export capacity is more than 150 bcm/y, there are currently no pipelines connecting it to Europe. Iran's gas grid is already connected to Turkey through the Tabriz-Ankara pipeline⁵¹ but a connection between Ankara and Europe is needed in order to import Iranian gas to Europe.

International sanctions taken by the EU and the US, in particular those targeted towards Iran's energy sector, have slowed down the development of domestic gas infrastructure by discouraging foreign investment. Nonetheless, further to the Geneva conference on 24 November 2013, Iran and the international community found an agreement on Iran's nuclear programme. This can be seen as a step towards a normalisation of the relations between Iran and the West, which is the key to enhancing energy cooperation in the long term.

LNG seems to be the most credible way to import Iranian gas into Europe

The long-term outlook

Iranian gas is likely to become accessible for Europeans in the long term, primarily through LNG. Iran is currently developing its LNG export capacities⁵², as well as planning new pipelines. A projected pipeline linking Iran to Oman, with a 10 bcm/y capacity, would allow Iran to export its gas via the Omani LNG hub by 2017. Experts believe Iran will raise its LNG production from 131 bcm in 2009 to 226 bcm by 2030⁵³. Should Turkey and Iran reach an agreement on the projected Persian pipeline, Europe would be able to import between 25 and 30 bcm/y⁵⁴. But difficult relations with Turkmenistan and Turkey, and the terrorist threat (PKK attacks directed at the Tabriz-Ankara pipeline) result in frequent cuts in gas delivery to the country and in

Iran is in the process of normalisation of its relations with the West and

⁴⁹ See Oxford Institute for Energy Studies, [What the Ukraine crisis means for gas markets](#), March 2014; [EIA](#) ; [OPEC](#).

⁵⁰ See IEA.

⁵¹ Capacity: 14 bcm/y.

⁵² Iran plans to have 7 other LNG terminals. See [Fondazione Eni Enrico Mattei](#).

⁵³ See ATKearney. [The Future of the European gas supply](#). December 2011.

⁵⁴ See Reuters. [Iran reports Turkey gas deal, Ankara stands back](#). 23 July 2010.

of reforming its energy sector

its gas exports. LNG seems to be the most reliable way to import Iranian gas.

The country also seems to be ready to make the necessary reforms to make its energy sector more attractive for foreign investment, as recent statements made by the Iranian Oil Minister, Bijan Namdar Zanganeh, indicate⁵⁵.

Iran seems to be a credible alternative to Russian gas in the long term

In short, Iran does not constitute a credible alternative energy supplier in the short term, but in a long-term perspective it is a promising country. High potential for gas production, domestic energy sector reforms that are underway, and ongoing normalisation of its relationship with the West make Iran a credible alternative to Russia.

6.3 Qatar: Credible LNG supplier in the long run

Qatar holds the world's third-largest proven natural gas reserves after Russia and Iran

The European Union imported 38.57 bcm of natural gas from Qatar in 2011.

Overview of the country's gas sector and capacities

In 2012 Qatar had the world's third-largest proven natural gas reserves, after Russia and Iran, according to the EIA. The country is the world's largest LNG exporter and second-largest gas exporter. In 2012 Qatar's total production of dry natural gas was 154.64 bcm and its total exports of dry natural gas amounted to 119.48 bcm. The main natural gas field is North Field, located near Iran's South Pars field. Qatar's exports represented almost 9 % of all EU imports of natural gas in 2012; its main EU importers are Spain and Belgium. Exports to the EU are in the form of LNG.

A short-term perspective

An approximate 9 bcm increase in natural gas deliveries to Europe is expected in 2014⁵⁶. However, LNG is not as flexible as piped gas when it comes to increasing export quantities at short notice, and the volumes to be delivered (and hence produced) are already agreed upon. A significant increase in Qatari gas in the short term cannot therefore be expected

A sharp increase in LNG supply in the short term is unlikely

The long-term outlook

Qatar's energy strategy is to maximise its production capacity so as to take advantage of the current high price of LNG. The country is therefore currently considering the development of many new projects in North Field and is planning to increase its exports to Europe in the coming 5 years. This strategy is partly the result of the competition arising from Australia, forecast to overtake Qatar's leadership in LNG exports by 2020.

Qatar seeks to maximise its export capacities and is

One asset of Qatar's is its low domestic demand, which allows the country to export significant part of its production. Another strong point is its highly

⁵⁵ Tagliapierta S., 2014. [Iran after the \(potential\) nuclear deal: what's next for the country's natural gas market?](#) Fondazione Eni Enrico Mattei.

⁵⁶ See Bloomberg. [Qatar to Boost Europe LNG Sales as Gas Trades at 7-Year High](#). 23 December 2013.

actively developing new projects

developed infrastructure for LNG exports, and Qatar is also the world leader in GTL (gas-to-liquids) technologies⁵⁷.

Furthermore, Qatar is switching from long-term oil-indexed gas contracts to short-term ones in spot market sales. This represents yet another asset for Qatar as an alternative supplier.

Qatar's profile has many features allowing it to feature as a potential alternative supplier of gas

In short, the small flexibility that LNG allows prevents Qatari gas from supplying a significant additional volume of gas to Europe in the short term. However, low domestic demand, highly developed infrastructure, new gas contract designs and an active strategy of developing new projects make Qatar a credible alternative supplier of energy to the EU in the long run.

6.4 Algeria: A promising alternative marred by domestic instability

Algeria holds the second-largest reserves of natural gas in Africa after Nigeria

The European Union imported 45.87 bcm of natural gas from Algeria in 2011.

Overview of the country's gas sector and capacities

Algeria holds the second-largest reserves of natural gas in Africa, after Nigeria⁵⁸. In 2012 Nigeria's total production of dry natural gas was 209.7 bcm/y and its total exports of dry natural gas amounted to 48.44 bcm/y. Algeria is EU's third-largest gas supplier, accounting for about 14 % of total EU imports of natural gas in 2012. Most of these imports are made via pipelines. Algeria's main gas importers in the EU are Spain, Italy, France and the United Kingdom. Three main pipelines carry Algerian gas to Europe: Medgaz (capacity of 8 bcm/y)⁵⁹, the Pedro Duran Farell Gasline (capacity of 12 bcm/y)⁶⁰ and the Enrico Mattei Gasline (capacity of 33 bcm/y)⁶¹, representing a total capacity of 53 bcm/y.

In the short term new pipelines could provide up to 48 bcm/y

A short-term perspective

In the short term, the European Union could potentially import additional gas via pipelines up to a volume of 48 bcm/y, in the best-case scenario. Indeed, the Pedro Duran Farell Gasline could be upgraded to carry up to 20 bcm/y⁶². Two additional pipelines should be operational in the short term, bringing them up to 40 bcm/y. First, the GALSI pipeline (from 2014) with a capacity of 8 bcm/y⁶³. Second, the Trans-Saharan gas pipeline, with a 30 bcm/y capacity. However, the latter seems unlikely to be operational in the short term given

⁵⁷ Gas to liquids (GTL) is a refinery process to convert natural gas into liquid hydrocarbons such as gasoline or diesel fuel.

⁵⁸ 4.5 trillion cubic meters.

⁵⁹ See [Medgaz](#).

⁶⁰ See [European Commission](#).

⁶¹ Ibid

⁶² Ibid

⁶³ See [Edison](#)

Terrorist threat is high, making Algeria an unreliable short-term solution

Many projects exist but their completion is undermined by administrative delays, lack of investment and technical problems

Table 4:
Upcoming natural gas projects in Algeria.

that the project is experiencing delays resulting from security risks, increasing costs and the instable political situation in the region⁶⁴. However, the Algerian government is not enthusiastic about that last project.

A new LNG plant connected to the Gassi Touil fields has opened in 2014 and is expected to provide up to 6 bcm/y. Another plant (Skikda LNG plant, capacity 7 bcm/y) was put back on stream after being damaged by an explosion⁶⁵.

Despite all these promising developments, one problem remains: the security threat represented by militants groups in the country, which have attacked gas and oil pipelines frequently in recent years. This risk undermines Algeria reliability as a significant energy supplier in the short term

The long-term outlook

Algeria's main gas fields – Hassi R'Mel, Rhourde Nouss, Alrar, and Hamra – are depleting⁶⁶. To compensate the loss, the country has launched many projects.

Project name	Partners	Output (Bcf/y)	Start year
Gassi Touil	Sonatrach	tbd	2014+
In Salah (expansion)	BP/Sonatrach	200	2015
Reggane Nord	Repsol/Sonatrach	102	2016
Timimoun	Total/Sonatrach	57	2016
Touat	GDF Suez/Sonatrach	159	2016
Ahnet	Total/Sonatrach	100-150	2016
Hassi Ba Hamou	BG Group/Sonatrach	70-100	2016+
Isarene (Ain Tsila)	Petroceltic/Sonatrach	tbd	2017

Billion cubic feet per year is Bcf/y.

Field expansion at In Salah is to ensure that the current level of output at In Salah is maintained.

Other gas fields that are expected to begin production between 2018 and 2020 are Hassi Mouina, Zerafa, Djebel Hira, Tinhert, Bourarhet, and field expansion at Haoud Berkaoui. Source: Arab Oil & Gas Directory, Global Insight, Repsol, Total, Oxford Energy, *Oil & Gas Journal*, and Bloomberg

Source: EIA.

Algeria is a promising solution for European gas supplies. But its potential is undermined by high security risks.

However, many have been postponed because of delays in government approval, lack of investment, infrastructure issues and technical problems. Furthermore, the risk of the Libyan crisis spreading to Algeria and the frequent terrorist attacks on pipelines make reliance on Algeria risky.

In short, Algeria is the most promising alternative supplier of gas for Europe, in terms of both reserves and infrastructure. Nonetheless, there is a high risk of disruption caused by terrorist attacks on gas infrastructure in both the short and the long term.

⁶⁴ EIA

⁶⁵ See [Energy Delta Institute](#).

⁶⁶ See [EIA](#).

6.5 Kazakhstan: Exports routes going through Russia

Kazakhstan's gas production and domestic consumption do not allow the country to be a significant gas exporter

The European Union does not import gas from Kazakhstan.

Overview of the country's gas sector and capacities

In 2012 Kazakhstan's total production of dry natural gas was 11.65 bcm/y and its total exports of dry natural gas amounted to 11.26 bcm/y. Most of the country's natural gas resources are situated in four fields (Karachaganak, Tengiz, Imashevskoye, and Kashagan) in the form of associated gas⁶⁷. More than 70 % of the gas produced in the country is reinjected into oil production.

A short-term perspective

Current levels of gas production in Kazakhstan are barely enough to meet the growing domestic demand. In the short term, Kazakhstan is unlikely to become a gas exporter to Europe. The other important issue with Kazakhstan as an alternative energy supplier is its underdeveloped pipeline network. Exports routes go through Russia, and the eastern and western parts of the country are not connected. Therefore, in the short term, the country cannot constitute an alternative energy supplier.

The long-term outlook

Kazakhstan is currently looking at developing the two fields Kashagan and Imashevskoye, which the EIA estimates could provide more than 30 bcm/y by 2021. However, Kazakhstan does not seem to have any pipeline projects directed at Europe that would bypass Russia.

In short, Kazakhstan does not constitute a credible alternative to Russian gas, mostly because all current and projected infrastructure routes go through Russia.

The lack of pipeline routes avoiding Russia prevents Kazakhstan from being a credible alternative

6.6 Nigeria: Insufficient infrastructure and terrorist threat

Nigeria holds Africa's largest natural gas reserves

The European Union imported 15 bcm from Nigeria in 2011.

Overview of the country's gas sector and capacities

Nigeria is the world's fourth-largest LNG exporter and holds Africa's largest natural gas reserves. In 2012 Nigeria's total production of dry natural gas was 33.32 bcm/y and its total exports of dry natural gas amounted to 26.49 bcm/y. The country exported 26.6 bcm of LNG⁶⁸ and represented 3.4 % of the EU's total imports of natural gas in 2012. Spain and France are the largest importers of Nigerian LNG, after Japan, accounting for respectively 19 % and 12 % of Nigeria's total LNG exports.

A short-term perspective

Nigeria mostly exports to the EU in the form of LNG, which makes a sharp

⁶⁷ See [EIA](#).

⁶⁸ Source : EIA.

Attacks and sabotage against pipelines are frequent

short-term increase in exports unlikely.

Most of Nigeria's natural gas resources are located in the Niger Delta, a region of high instability. Frequent attacks and sabotage of pipelines, in addition to conflicts between rival local groups over resource control, make Nigeria an unreliable country to import gas from as long as the situation remains the same.

The long-term outlook

Nigeria is developing many projects

Having the continent's largest reserves, Nigeria could represent a credible alternative supplier of gas, at first glance. The country is currently developing the Brass LNG facility that aims at having one loading terminal and two liquefaction trains. The expected export capacity is 13.45 bcm/y. Many other projects are underway: new gas-gathering facilities and repair of existing facilities, development of the Forcado Yokri Integrated Project and the Southern Swamp Associated Gas Gathering Project, the Escravos Gas-to-Liquids plant, the Escravos gas plant development, Sonam field development, the Onshore Asset Gas Management project, the Assa-North/Ohaji South development, Gbaran-Ubie, the Idu project, and the Tuomo gas field⁶⁹.

Investing in infrastructure is key to increasing Nigeria's export capacities

However, Nigeria's potential is undermined by the lack of infrastructure to monetise natural gas (produced with oil in associated fields). The country flared 21 % of its gross natural gas production in 2011. So investing in Nigerian infrastructure development is the key to maximising Nigerian gas exports to the European Union. It is the necessary condition for Nigeria to represent a credible alternative supplier of energy in the long term.

In short, Nigeria has the necessary profile to become a significant contributor to European energy security. However, the main issues are the lack of infrastructure and the risk of terrorist attacks. For those reasons, Nigeria does not seem to be a credible alternative supplier in the short to mid-term, yet could become one provided that the necessary investment is made.

6.7 Norway: The most reliable energy supplier

Norway is the second-largest EU gas supplier and the world's second-largest gas exporter after Russia

The European Union imported 96.45 bcm of natural gas from Norway in 2011.

Overview of the country's gas sector and capacities

In 2012 Norwegian gas accounted for about 29 % of EU imports of natural gas, making the country the second-largest EU gas supplier and the world's second-largest exporter, after Russia. In 2012, Norway's total production of dry natural gas was 116.34 bcm/y and its total exports of dry natural gas amounted to 109.29 bcm/y. Norway's main gas fields are Troll, Ormen Lange, Asgard and Sleipner Ost, which account together for 60 % of the country's total production. Gas is mostly delivered through pipelines. The EIA estimates that LNG represents only 4.3 % of the country's total exports to the EU.

⁶⁹ Source: EIA.

Germany, France, the UK and Belgium are the main importers of piped Norwegian gas, while Spain is the main receiver of Norwegian LNG in the EU.

In the short term, Norway could supply an additional 13 bcm/y to the EU

A short-term perspective

The new gas field Gjøa was put on stream in 2011, and is expected to export gas to Europe through the Frigg UK Pipeline in Scotland. The pipeline's capacity is roughly 13 bcm/y. Norway could hence supply an additional 13 bcm/y to European markets. In addition, an extension of the Snøhvit field (piped gas and LNG) is expected to be on stream by 2014-2015⁷⁰.

The main obstacle to using Norwegian gas as an alternative to Russian gas in the short term is the lack of flexibility of Norway's gas exports, as the country's production is more or less exactly tailored to the planned exports.

The long-term outlook

LNG development could supply up to 20 bcm/y to the EU in the long run

Norway has many projects designed to increase its gas production, notably its LNG export capacities through the possible expansion of the Melkoya LNG facility and potential developments in the Gjøa field. The possible volume increase in Norway's gas exports to the EU is estimated at 20 bcm⁷¹.

Norway is the most reliable energy supplier among all other possible sources

In brief, in the short term Norway could provide the European markets with 13 bcm/y of piped natural gas. In the long term 20 bcm/y of LNG could be imported from Norway. Moreover, Norway is the most reliable energy supplier of all the possible sources (democratic political regime, proximity, low security risks).

6.8 Libya: Domestic turmoil and scarce gas exports

In 2012 natural gas imports from Libya accounted for only 2% of total EU gas imports

The European Union has imported 2.4 bcm of natural gas from Libya in 2011.

Overview of the country's gas sector and capacities

Libya is the fourth natural gas reserve holder in Africa. In 2012 natural gas imports from Libya accounted for only 2 % of total EU gas imports. The same year, Libya's total production of dry natural gas was 12.04 bcm/y and its total exports of dry natural gas amounted to 6.38 bcm/y. Libyan gas mostly comes to Europe through the Greenstream Pipeline (capacity of 9 bcm/y).

A short-term perspective

In the short term, Libya cannot constitute a reliable alternative energy supplier because of the political instability within the country and the terrorist threat. Indeed, the Greenstream pipeline that provided 9 bcm/y to Italy stopped in 2011 as a result of the turmoil of the Arab uprisings, explaining why imports dropped significantly in 2011. Currently, oil and gas

⁷⁰See: [Statoil](#).

⁷¹ See Bruegel. [Can Europe survive without Russian gas?](#) 21st March 2014.

exports are still significantly under pre-Arab-Spring levels.

Political instability and terrorist threats undermine Libya's potential

The long-term outlook

Gas production is expected to increase with the development of two associated oil and gas fields: Faregh, operated by Waha in the Sirte Basin, and Mellitah's offshore Bouri field⁷². Owing the current political turmoil, there seem to be no other upcoming projects for the development of gas export infrastructure.

In short, Libya will not represent a serious option for Europe in the foreseeable future, until the situation in the country is stabilised.

6.9 Azerbaijan: Legal deadlock and insufficient capacities

The EU does not import gas from Azerbaijan.

Azerbaijan was until recently an importer rather than an exporter of natural gas

Overview of the country's gas sector and capacities

In 2012, Azerbaijan's total production of dry natural gas was 17 bcm/y and its total export of dry natural gas was 6.92 bcm/y. Shah Deniz, located in Azerbaijan, is the largest gas field of the Caspian Sea region. It was recently discovered, and allowed Azerbaijan to become an exporter of natural gas.

Infrastructure with which to import Azeri gas to Europe without going through Russia is lacking

A short-term perspective

The European Commission has long tried to introduce competition to the Russian South Stream with an alternative southern corridor that would bring Azeri gas to the European market. The EU initially pledged EUR 250 million to support the 'Nabucco' pipeline, which would cross Turkey, Bulgaria, Romania and Hungary and be supplied by various sources. Since then, the project has been replaced by another: in July 2013, the Azeri consortium Shah Deniz II (and its partner BP) chose to pursue the less expensive Trans-Adriatic Pipeline (TAP). TAP will bring gas to Italy after crossing, Greece and Albania and will be connected with the Trans-Anatolian Natural Gas Pipeline Project (TANAP) to Turkey and Azerbaijan. The line will be open only to Azeri gas supplies and will not receive public resources.

Azerbaijan is a crucial actor in the EU's energy security strategy

The long-term outlook

Gas imports through TANAP and TAP could reach 31 bcm/y by 2026

Azerbaijan occupies a particular place in the EU's strategy of diversification of energy supplies. The Trans-Adriatic Pipeline (TAP) will finally open the long-awaited southern corridor, bringing Azeri gas to Europe, avoiding Russia. This connection is a crucial one, as it would enable the EU to import natural gas not only from Azerbaijan but also from other countries of the Caspian region such as Iran and Turkmenistan.

The total capacity to be exported to the EU through TANAP and TAP is expected to be only 10 bcm/y by 2018. But capacity is expected to reach 31 bcm/y by 2026.

Lastly, the Azerbaijan-Georgia-Romania Inter-connector (AGRI) project could

⁷² EIA.

Azerbaijan lacks proper infrastructure and its export capacities are insufficient

represent another way to export Caspian Sea resources to Europe, through LNG, with an estimated capacity of up to 8 bcm. The project is still in the feasibility study phase.

In short, Azerbaijan does not represent a credible alternative to Russian gas in the short term owing to the lack of proper infrastructure. In the long run, even though new routes avoiding Russia are underway, the anticipated export capacities are still insufficient for Azerbaijan to be a game changer in the European energy security.

6.10 Turkmenistan: Legal disputes locking resources

In 2011 Turkmenistan was the second-largest dry gas producer in Eurasia after Russia

The European Union does not import gas from Turkmenistan.

Overview of the country's gas sector and capacities

In 2012 Turkmenistan's total production of dry natural gas was 69.78 bcm/y and its total exports of dry natural gas amounted to 45.47 bcm/y.

In 2011 the country was the second-largest dry gas producer in Eurasia, after Russia, and it holds the world's sixth-largest natural gas reserves⁷³.

There is currently no pipeline connection from Turkmenistan to Europe

A short-term perspective

The main issue Turkmenistan faces in exporting its natural gas is that there is no direct pipeline connection to Europe. As a result of restrictive policies that discourage foreign investments, the country also lacks monetising infrastructure, which prevents it from exporting LNG. Thus, in the short term, Turkmenistan cannot be seen as an alternative energy supplier.

The long-term outlook

Projects exist to link the Caspian Sea region to Europe that could provide up to 30 bcm/y

There are currently pipelines connecting Turkmenistan to Iran: the Korpezhe-Kurt Kui Pipeline (capacity of 13.36 bcm/y) and the Dauletabad-Khangiran Pipeline (capacity of 11.87 bcm/y). This could potentially be an additional gas supply for Europe, provided that the connection between Turkey (Ankara) and Europe is completed.

A more direct route is also planned, linking Turkmenistan to Europe, via the Caspian Sea. Two pipeline projects would allow transport of natural gas from the south-east part of the country to Azerbaijan, and then to Europe: the East-West pipeline (capacity of about 30 bcm) and the Trans-Caspian Pipeline (proposed capacity of about 30 bcm) across the Caspian Sea through Turkey to Greece and to the rest of the EU.

Legal disputes over the status of the Caspian Sea have frozen pipelines projects

However, the completion of the Trans-Caspian pipeline faces two major issues: the project was originally to be linked to the Nabucco pipeline, which is now abandoned, and legal disputes over the pipeline route between Azerbaijan and Turkmenistan have frozen the project⁷⁴. A way to overcome the obstacle of the Caspian Sea status is to develop Compressed Natural Gas (CNG) technologies which would allow Turkmen gas to be exported to

⁷³ EIA.

⁷⁴ See EIA.

Azerbaijan by ships, not through pipelines. Nonetheless, such project is more costly than a conventional pipeline and would provide less volume (3 to 5 bcm/y)⁷⁵.

Turkmenistan has a high potential for EU energy security, undermined by various factors

In short, Turkmenistan has a high potential for EU energy security, especially together with other gas suppliers in the Caspian Sea region. However, jurisdiction disputes over the Caspian Sea and a domestic policy discouraging foreign investment prevent the country from exploiting its potential and from representing a credible alternative energy supplier for Europe.

6.11 Mozambique: a potential 'El Dorado' by 2020

Mozambique has made major gas discoveries in since 2010.

Overview of the country's gas sector and capacities

In 2012, Mozambique's dry natural gas production was 4.3 bcm and the country exported 3.56 bcm of dry natural gas. Mozambique's gas production mainly comes from two onshore fields: Pande and Temane. Until recently, Mozambique had no hydrocarbon industry. It relies on South Africa for its oil imports. Recent discoveries in the offshore Rovuma Basin have resulted in several LNG projects. In 2013, Mozambique's proved reserves of natural gas accounted for 135 Tcm (trillion cubic meters).

There are no connecting routes to Europe.

A short term perspective

Mozambique currently exports most of its natural gas production through the Sasol Petroleum International Gas Pipeline to South Africa. There are no connections to Europe, or LNG export facilities. Mozambique cannot become an alternative to Russian gas in the short term.

The country could become a giant in LNG exports.

The long term outlook

The state of play is changing in Mozambique after significant gas discoveries in the offshore Rovuma Basin since 2010. A total of 3 Tcm has been discovered⁷⁶. New LNG projects may turn the country into a 'new El Dorado' for gas⁷⁷. Two main companies are leading exploration: the American Anadarko and the Italian ENI. Anadarko discovered between 0.9 and 1.82 bcm of recoverable natural gas in Prosperidade and Golfinho/Atum complexes. ENI's discoveries account for 2.1 bcm in the Mamba complex and the Coral site⁷⁸. Production is expected to begin by 2018.

In short, Mozambique cannot supply gas to Europe in the short term, however, the recently discovered large potential and the launching of many LNG projects makes Mozambique an interesting option for European gas supply in the long run.

⁷⁵ See Eurasian energy Observer, [Turkmen gas into the Southern Corridor: Transcaspian or CNG?](#)

⁷⁶ See SPTEC advisory, [Mozambique: the emergence of a giant in natural gas](#). January 2013.

⁷⁷ See Italia Oggi, [Mozambico, immenso eldorado di gas e carbone](#), 4 April 2014.

⁷⁸ See [EIA](#).

6.12 The Eastern Mediterranean gas fields: Proximity sources hostage of local disputes

Discoveries of gas in 2009 and 2010 have transformed the Eastern Mediterranean into a natural-gas-producing region and a potential energy exporter for the EU. 35 bcm could be made available by 2020, but local disputes and the interest of foreign multinational energy companies (from Russia and the US) are creating uncertainties about their development. The situation is analysed in an in-depth analysis by DG EXPO's Policy Department⁷⁹, summarised in the table below :

Table 5:
Levant Basin's potential sources for the Southern European Market to 2020

Current capacity available for exports excluding possible future contracts and considering agreements already signed (Israel-Jordan and Israel-Palestinian) and domestic long-term demands: Israel (375 bcm) and Cyprus (70-110 bcm), which makes a total of 445-485 bcm.

*Based on a hypothetical commercial 20-year contract whereby Cyprus and Israel commit 60 % of their exports to Europe.⁸⁰

**TANAP capacity dedicated to Turkish needs could head towards Europe if Turkey covers its domestic consumption with Israeli gas.

Transport	Partners	Gas capacity achievable for Europe (bcm/year)				Direct cost (USD)	Year	Issues
LNG plant	Cyprus	1 LNG capacity; 7				10-15 billion	2020	<ul style="list-style-type: none">• Lack of investment and gas• Uncertain Israeli strategy
	Cyprus&Israel	1-2 LNG plants; 7 – 14						
Pipeline	Israel-Cyprus-Greece	Max. capacity*		Pipeline capac.		17-20 billion	Post 2020	<ul style="list-style-type: none">• Vulnerable to Turkish EEZ or Egyptian-Greek EEZ agreements• Technical issues: 1000-km pipeline at depths of 3000 meters• The most expensive option
		Israel	11					
		Cyprus	3	30 -40				
		Total	14					
	Israel-Cyprus-Turkey or Israel-Turkey	TANAP capacity				5-10 billion	2023 - 2025	<ul style="list-style-type: none">• Political issues to cross either Syria, Lebanon or Cyprus’s EEZs• Lack of spare capacity within the Turkish Gas Transmission System• Russian opposition
		Spare capacity		5				
		Turkish needs**		6				
		Total		5-11				
Electricity cable	Israel-Cyprus-Greece	Electric power from gas-fired plants; 2000 MW				2 billion	2016	<ul style="list-style-type: none">• Technical issues: 1000-km cable at depths of up to 2000 meters

Source: own elaboration based on data on [ELIAMEP](#)

⁷⁹ See The prospect of eastern Mediterranean gas production: An alternative energy supplier for the EU? DG External Policies, Policy Department, April 2014

⁸⁰ Tsakiris, T., [Shifting sands or burning bridges?](#), ELIAMEP, Greece, February 2014, p. 58.

7 Alternatives to Russia: What comes next?

EU energy security: time for serious decisions?

After the de facto annexation of Crimea, the situation in Eastern Ukraine is changing day by day and it is becoming problematic to make any forecast. The Russians have raised the price of the gas sold to Ukraine on the basis of unpaid debt to Gazprom and threatened to halt gas supply. Now the question is: will the Russians use the 'energy weapon' against the EU directly? This could only be used once, just like a nuclear weapon; then the credibility of Russia as a supplier to the EU would be severely damaged, with the latter decisively reducing its dependency on Russian gas. An aggressive move such as this on the part of Russia is expected to boost the Union's solidarity on energy security issues. This has been made evident already, during the recent European Council in March: the Crimean crisis has acted as a wake-up call for Europe to pursue even more actively its strategy of increased energy independence from Russia. This strategy has been in the process of formulation since the last gas crises of 2006 and 2009. In the short term, the EU will be seriously harmed if Russia uses its energy weapon against Ukraine, given the lack of alternative suppliers.

A number of policies and new sources may emerge in the long run, provided the EU is ready to pay the price right now. So far, Member States' individual national interest has prevented them from following a common energy security strategy. Though South Stream has been delayed, Nord Stream has not only been approved, but it is planned to double its capacity, increasing Germany's dependency on Russian gas. Without immediate action, EU dependency on Russia will increase in the long term. A costly and courageous action will need to be taken by the EU Council on the basis of the forthcoming Commission report⁸¹ on reducing EU dependency.

Russia is also seeking alternatives: it is planning to export to China. But redirecting the entire volume of gas currently exported to the EU to China will require time and gigantic investment. Will China be keen to attain the same level of dependency as the EU, if Russia is ready to violate its terms of trade for political purposes? Providing an answer today is impossible. What is probable is that the EU, with an appropriate policy mix, will in any case boost its diversification policies and reduce (but not offset) its imports from Russia. It will be forced to do so if Russia continues to destabilise the region.

⁸¹ To be published in June.