

and growing market. Global liquefaction capacity is increasing, as are the number of importers, terminals, and carriers. LNG plays a major role in Europe's attempts to achieve energy security and diversity. In the short term, the EU will continue to maintain its import overcapacity. That is a good thing if and when current sources of natural gas are interrupted; the EU can turn to LNG to make up for the shortfall.

Concluding remarks

EU external energy policy in the early twenty-first century is not what it was prior to the Lisbon Treaty. The Commission is increasingly taking the initiative, leading the member states under the flag of market-building. Although it certainly does not always work to the Commission's satisfaction, the EU increasingly looks and behaves like a more cohesive body in the area of its external energy relations, at least relative to what it was just a decade ago. Diplomacy is the primary tool of the external dimension, where interests are secured through multilateral frameworks, the most important being the Energy Community. EU efforts to expand the reach of the energy *acquis* through such regional institutions as well as bilateral dialogues and partnerships are helpful. However, without a healthy, diversified surplus of energy resources flowing into a functioning internal energy market, those multilateral efforts will continue to suffer under the strains of national interest.

The EU faces external energy problems rooted in the historical development of the member states' energy-import infrastructures and the long-term relationships they established with their suppliers. While this problem is not going to disappear anytime soon, the member states seem to agree that the single most important problem is the unbalanced dependence on Russian gas delivered by Russian-controlled pipelines. Import capacity is not the issue, but rather who delivers what to whom at which price; and that is what makes the external dimension so politically volatile. The EU is trying to both change Russian behaviour through partnerships and interaction as well as find new ways to get gas to Europe. It has been somewhat successful with the latter; not so much with the former. Diplomacy is helpful, but in an increasingly regionalizing world, it may be no match for market power and political ambition.

Chapter 8

Policy Challenges on the Horizon

As it tries to meet the energy demands of its consumers, the EU needs to resolve several policy challenges. Almost everyone in the Union agrees on the need for comprehensive energy security, but achieving anything close to it will require resolving a lot of unfinished business, both internally and externally. Issues in the internal dimension are comparatively easy to resolve once one identifies and bridges the gaps between national interests. The external dimension is more problematic, because the most severe issues, and those most likely to continue to divide the Union, are geopolitical in nature.

In keeping with our structured approach of the energy typology, we address these challenges by grouping them into the internal and external dimension, incorporating interdependent, multidimensional policies pertaining to environmental sustainability and climate change. Internally, the EU faces serious questions over such diverse matters as when, or even if, it will ever complete its internal energy market, which measures will be necessary to improve energy security, and when and how it will develop true solidarity to form a common energy policy for all the member states. Along the way, it must resolve open questions about the compatibility of creating a carbon-light economy and achieving comprehensive energy security. How economically viable are renewables after all? Are increasing climate change targets useful launching points for policy or rather, do they shroud out realizable alternatives that could have a stronger impact in the long run? Should the EU consider increasing indigenous fossil fuel exploration, in particular the highly controversial exploitation of shale gas? As all these questions illustrate, EU energy policy is plagued by the constant struggle between which direction to take and how to get there, as well as between the concurrent need for solidarity and the securing of national interests.

Even as it pursues resolutions to its internal problems, the EU and its member states must maintain existing import avenues and

find new ones in order to both increase the quantity of supplies flowing into Europe as well as offset any possible disruptions. As this challenges the regional spheres of influence of other states, Russia in particular, it steps right into a morass of political trouble. Thus, we chart four external cases that reveal the geopolitical challenges through which EU policymakers must navigate: managing relations with Russia, gaining direct access to Caspian resources, defining its relationship with Turkey, and determining whether, and how, to jointly exploit the vast resources under the Arctic Sea.

The EU's internal challenges

Moving forward with the internal market

European institutions have generated enough documents emphasizing the merits of a well-integrated internal energy market to fill libraries. The idea and variations of its assumed value are almost commonplace in the statements of the European Commission, the Council, and the EP; and almost every stakeholder, from industry associations to consumer organizations, have long-since joined the chorus. The three liberalization packages brought tangible benefits to consumers by expanding competition and integrating previously physically detached energy markets. For example, the unbundling components freed consumers to choose their energy suppliers to an unprecedented degree throughout most of Europe, and some pilot projects, focusing on regional cooperation, established the so-called 'day-ahead market coupling', a mechanism that manages cross-border electricity flows from the Baltic States to the Iberian peninsula.

Despite all the progress, however, the speed of integration remains modest, seeming to accelerate only if external crises force the EU to act. It is not as though the challenges concerning the internal energy market are much different from other sectors of Europe's single market. As elsewhere, it is first and foremost a matter implementing existing laws. As the Commission has amply demonstrated, compliance rates are not indicative of a strong will among the member states to strengthen the single energy market. Indeed, while a harmonized legal framework (in Euro-speak, Network Codes) is being developed under the authority of ACER and network operators, progress is uneven between the electricity and the gas sector, as well as between regions. In addition to the

uneven implementation of energy regulations, transparency is a major ingredient of a functional market. Without it, markets tend towards oligopolies, monopolies, and other distortions (e.g. so-called national champions). Important steps have been made to improve the transparency dimension, such as Regulation 1227/2011, which establishes rules on wholesale energy market integrity and transparency (EP/Council 2011). Another example concerns the establishment of a central information transparency platform for the publication of data in electricity markets in early 2015. Thus, it is not about the finalization of the single energy market as such – a running project ebbing and flowing along with changes in energy mixes, technological advancements, and societal mood – but rather the uniform application of existing rules, both in fact and in spirit.

The good news is that consumers reap the benefits of increased competition. In January 2014, the Commission reported that wholesale energy prices for electricity had dropped significantly, and that wholesale gas prices had remained stable since 2008, even though taxes and levies had risen. The bad news is that dismantling national champions stymies support for large-scale infrastructure projects. Establishing a joint infrastructure programme in order to ensure the transport of energy across the Union is a *sine qua non* of a working energy market. Thus, the importance of establishing and maintaining a fully integrated electricity and gas distribution grid can be observed within not only the internal dimension but also the external dimension. In the face of the unstable political environment of most of Europe's energy suppliers or transit countries, the security of supply has and will continue to have an impact on future price development. So far, Europe's economic malaise has dampened energy demand, but an integrated energy grid will be indispensable by the time the economy picks up again. Since building such a grid does not only cost enormous amounts of money but also takes considerable time to build, the time to invest is now. The benefits are huge. A complete internal energy market could bring net economic benefits between 16 and 40 billion euros a year (Booz & Company 2013). Thus, a well-integrated energy market enhances the resilience of the internal market and acts as a shock absorber for externally caused supply disruptions (European Commission 2014q). The only question that remains is who should pay for it?

Finally, even if one day in the future Europe achieves a fully integrated energy market, one further ingredient is required for it to be sustainable, and that is a low-carbon economy, which comes at a

cost. Those costs are twofold. Despite the impressive progress energy efficiency has made over recent decades, sustainability cannot be achieved without a marked change in consumption patterns, because of negative externalities, irrespective of whether we produce energy from fossil fuels or renewables. All energy production is dirty. The best answer, therefore, is simply to use less. Investment into renewables, for which the EU has set an ambitious target of 27% of all energy production by 2030, is still a highly valuable objective, yet one that is difficult to achieve in times of economic crisis. Only in combination with massive investment in research and development, jointly organized at European level, can the full benefits of renewable energy sources be realized. Geographically, some countries are better positioned to harvest green energy. Meanwhile, the long-term installation of a Smart Grid will help cushion against the volatility of wind and solar power, and foster significant shares of cross-border trade.

An integrated market, based on a comprehensive legal framework and a flexible grid that allows for competition and transport of electricity and gas across the Union, is beneficial for the consumer and strengthens Europe's energy security. All of this can only be sustained through an evolved carbon-light economy, which amounts to nothing less than a fundamental transformation of European society.

Solidarity, common energy policy, or energy union?

At the beginning of Chapter 7, we noted that energy politics in the European Union is concomitantly an issue of integration and disintegration. Although energy matters (governance over the trade of coal) provided the impetus for Europe's integration in the 1950s, energy quickly became a central feature of Europe's national divisions rather than a source of unity. Almost seven decades later, a greatly expanded Union still struggles to agree on important details about a common energy policy. While the Lisbon Treaty pronounced the need for solidarity in the energy sector, it was less forthcoming on the details of how such solidarity could be achieved. Electricity trade between Spain and France provides an example. In 2014, Madrid complained that Paris was preventing the construction of transmission lines to carry Spanish electricity across the Pyrenees, while France complained that intermittent Spanish wind power posed risks to the French electricity grid. Under the notion of an

internal energy market, the parties should be unified on the idea of moving electricity surpluses to lower costs for consumers. However, France has legitimate concerns about the stability of its largely nuclear-powered grid. In essence, France and Spain are electricity islands, a problem indicative of the fragmentation of Europe's energy market. Simply stated, harmonization seems difficult to deliver in the energy sector.

This is not to say that the member states disagree on everything, or even most things; a great deal of integration has already been achieved. Rather, it means that there is a fine and important difference between maintaining solidarity, either externally or internally, on energy issues, sharing targets and goals – and coordinating independent policies along such goals – and establishing a so-called Energy Union that establishes a single set of binding rules, targets, and coordinated purchasing groups executed through a single treaty-level authority. Therefore, Europe must choose which future it wants: independent states working together in harmony or a union that legally and practically speaks with one voice.

Cracks in EU solidarity are seen most vividly in the external dimension, but internally there are several key points of contention. At the March 2014 Council meeting it became evident that the member states remain divided over how much effort they are willing to invest to increase the 'greening' of their energy production. Some are investing billions in sustainability and renewables, while others continue to follow a simple market principle, one that favours coal over gas and renewables. When the Council met again in October, it endorsed the Commission's proposed collective targets 'in the most cost-effective manner possible [...] balancing considerations of fairness and solidarity' (European Council 2014). It also decided to reform the ETS, creating a stabilization fund, but agreed to indefinitely continue the system of free allocations, and decided on precious little in reference to the transportation sector. While the Council explicitly called the full implementation of the internal energy market a matter of urgency, it set only a few, low minimum standards on existing electricity interconnections and agreed to implement critical infrastructure projects, such as the North–South corridor, the Southern Gas Corridor, and a new gas hub in southern Europe. Moreover, despite noting its desire to build an Energy Union by keeping the goal 'under regular review', it repeated the traditional mantra that the EU must respect member-state freedom to determine their own energy mix. It would seem that regardless of

its unity in goals, the particulars of who should do what, when, and how continues to elude the European Union.

Current discussions focus on a broad range of activities that would be part of an Energy Union. These include large-scale, joint R&D programmes to improve existing renewable technology, transparent systems for joint fossil resource management, gas storage, emergency distribution plans, authorized subsidies for gas in order to curb the increasing use of cheap coal, and the joint management of intermittency problems. None of these are particularly controversial and are unlikely to prove insurmountable obstacles. However, one notion most certainly is: the idea to implement a single buyer model for gas. While this would unite EU purchasing power, it would also make the Commission a central commodity manager that sets prices, bringing back the public utility model of the 1970s that the EU struggled so hard to liberalize. Whichever features it ultimately incorporates, such a Union could significantly improve relations with Russia and increase the EU's bargaining power in the medium to long term. Given the context of the 2014 Ukraine crisis and the obvious need to complete its internal energy market, an Energy Union for Europe seems less a matter of if than when. What remains are the form it takes and the competences allocated to its newly established authority, decisions that reside in the purview of diplomats.

Achieving climate targets and the future of renewables

The EU's ambitious targets, both for reducing its GHG emissions and increasing the share of renewables in the energy mix, are part of its plan to foster a sustainable, low-carbon economy. However, when the European Commission presented its framework for climate and energy policies for the period 2020–2030, in January 2014 (European Commission 2014), its proposals marked a tacit retreat on the strict environmental policies that have been the bulwark and driving force behind EU energy policy for decades. The Commission's proposal came at a time of increased concerns over European economic competitiveness. The EU was already lagging behind on its 20-20-20 targets, and there were real concerns that Europe was losing its economic edge, if not deindustrializing, as its environmental policies and increased energy costs were pushing energy-intensive industries to more attractive and less restrictive markets in the US and China. Their concerns were so substantial

that the Commission proposed measures to drop binding targets for energy efficiency and keep a rather moderate share of renewables (27%), binding only at the EU level (Brutschin and Pollak 2014).

Most stakeholders agree that the EU's current policies to regulate its energy market are suboptimal, but that is where the agreement ends. Widespread discrepancy in terms of preferred goals for CO₂ emissions, energy efficiency, and the share of renewables remains. As described in Chapter 6, the EU will need to implement a number of structural reforms to account for massive surpluses in its ETS market, which have tanked carbon prices, if it is to achieve its ambitious climate goal of cutting CO₂ emissions by 40% from 1990 levels) by 2030. It will also need to come to terms with the possibility that it may not meet its renewable goals in its overall energy mix, let alone that of the individual member states.

The share of renewables in EU member states varies substantially, ranging from Sweden at 50% to the UK and the Netherlands, among others, relying on less than 10%. Variation in the share of renewables in the member states' energy mixes reveals an inherent dilemma: the wide gaps that exist between the member states call into question whether the EU's overall goals can be achieved, particularly in light of Germany's recent upswing in the use of cheap coal. Furthermore, the EU faces difficulty in setting nationally binding targets because to do so contradicts the principle of national sovereignty, and thus the EU is unlikely to move beyond collective targets even in the event that it creates an Energy Union. Thus, for the foreseeable future we can expect to see continued debate over the appropriate share of renewables in the EU and a series of non-disastrous crises resulting from missed targets.

While some countries (e.g. Germany, Spain, and the Netherlands) have invested heavily in renewable energy technology during recent years, creating thousands of new jobs and seeking high and binding targets in order to solidify the sector, others (e.g. the UK, Malta, and Luxembourg) would have to implement massive structural changes to come even close to the current target of 20% by 2020. Those that oppose renewable targets argue that they are the most expensive way to reduce carbon emissions, preferring instead, for example, to rely on gas as a transition fuel. Yet the pursuit of renewable targets is not economically inefficient per se, but rather, depends on geography and market conditions. Large-scale hydropower is cheaper than wind power. On the other hand, binding renewable targets provide an important signal for industry and could trigger

future investments to induce structural changes in the energy market. Thus, the member states are unlikely to uniformly achieve overly ambitious targets for renewables, which puts pressure on them to fully integrate into the internal energy market, most notably in relation to a European-wide electricity grid, such that the achievements in renewables in one country can be explicitly felt in other more carbon-intensive countries.

In terms of energy efficiency, the Commission seems to have realized that setting absolute targets (e.g. maximum energy consumption of 1,474 Mtoe in 2020, as set down in 2012) does not make much sense given the strong influence of economic fluctuations on energy consumption (European Commission 2014: 22). One could as well reach such targets through another economic recession or miss them by a wide margin should the economy boom. Thus, the EU will need to focus on a target less sensitive to economic cycles and choose a better means of oversight in order to be more effective. Japan provides a good example. Tokyo was highly successful in increasing its energy efficiency by applying sector-specific goals. While such an approach may make oversight more difficult for Brussels, overseeing sector-specific energy efficiency achievements would provide the EU with a better control mechanism to respond to technological changes and economic cycles.

What all this means is that one has to be cautious about the outlook for the EU to achieve any, let alone all, of its lofty sustainability goals by 2030. Brussels simply cannot afford, or be expected, to trade economic competitiveness for environmental sustainability. It will need to continue tweaking its approach, part of which is underway with the planned reforms for the ETS. At the same time, the EU needs to balance the upside of energy-efficiency targets (i.e. its price signalling) with its downside (i.e. its dependence on economic performance). The first step in doing this is setting sector-specific targets. The most important, however, remains the establishment of a fully liberalized internal energy market. Unfortunately, achieving such a market seems to elude European politicians. Once again, the negotiations behind the 2030 framework revealed that the old game between the Commission and the member states continues unabated. The Commission proposes big changes, the Council confirms, but then waters them down, while the member states take their time selectively implementing those aspects that best befits their national interest. The EU's member states continue to sing the same song, but dance to a different tune.

Internal measures for infrastructure

In order to enhance security supply internally, the EU needs to be able to move electricity and gas from any point within the Union to any other, based on demand. As former European Commissioner for Energy, Günther H. Oettinger, noted in 2014, with 'sufficient infrastructure, energy is produced where it's cheapest and sent to where it is needed. All this translates into secure energy supplies all over Europe and lower bills for consumers' (European Commission 2014k). While the EU made substantial progress in the electricity sector through the interlinking of grids and increased cooperation between national regulatory authorities, more investment is required in strategic cross-border infrastructure and the development of Smart Grids to allow for more small-scale generation and local supply security. Meanwhile, there is massive room for improvement in the gas sector.

Although many missing links connecting EU member states' gas networks have been completed or are under construction and reverse flow rules have been implemented, reducing individual member-state vulnerability to externally caused shortages, the central problem in the gas sector remains the lack of a compatible, high-volume, trans-European pipeline network connecting Europe's fledgling regional gas hubs. Europe will have to invest massively in its internal gas infrastructure to achieve this end. The question is then, who will pay for it? In accordance with its liberalization agenda, the general practice so far has been to allow the private sector to take the lead and, thus, the bulk of the risk. Due to the huge costs involved, however, few are willing, or able, to take on that risk, especially without getting exceptions from Brussels over whether they can both sell and transport gas. That leaves the member states, which until recently have been largely prohibited from biasing the market through selectively financing preferred national projects and companies. Thus, the EU must strike a new balance in this regard or implement a common pool for investments in trans-European gas networks.

The European Commission has already endorsed a list of 250 key energy infrastructure projects eligible for funding under the €5.85 billion Connecting Europe Facility (European Commission 2013q). These so-called projects of common interest (PCI) are earmarked for accelerated licensing and improved regulatory conditions, and of these, almost 100 projects are in the field of gas transmission,

storage, and LNG. However, while this may sound like a large amount of money, it amounts to just a fraction of the estimated cost. By comparison, the US, which is not known for over-intervention into its energy market, spent more than \$90 billion on clean energy investments through its 2009 stimulus package. The Commission is thus literally banking on the assumption that initial seed money and regulatory easing will leverage the necessary private and public funding for these projects. In so doing, it is taking little risk and expecting huge results. The EU needs to spend a great deal more money collectively on its energy infrastructure, particularly in the gas sector. It needs to invest in large-scale regional gas hubs and storage facilities, dually enhancing security of supply and creating an internal mechanism for price signalling. While there seems no shortage of efforts to promote external projects to bring external gas to Europe, efforts at home need to be increased in order to capitalize on the changing nature of the international gas market.

Increased indigenous supplies: The 'hype' and reality of fracking in the EU

Europe's indigenous fossil fuel production has been declining for decades, pitting the need for long-term security of supply against the reality of having to replace conventional oil and gas supplies with a substantial reduction in consumption or an increase in unconventional sources. Notwithstanding increases in the development of Arctic resources and the discovery of a large gas field off the shore of Cyprus, there is an increasing interest in recovering unconventional fossil resources; and the shale gas revolution in the US has heightened speculation over the potential for shale gas to similarly transform energy markets in Europe, where early-stage exploration is under way. The European Commission estimates that the addition of unconventional gas into the EU energy mix could help alleviate import dependence in some member states and meet up to 10 % of EU gas demand by 2035, contributing to both EU security of supply and competitiveness. Yet of the technically recoverable shale gas resources estimated to be just over 13,000 Mtoe, only a fraction are considered to be economically recoverable (European Commission 2014l) and the EU will have to find ways to reconcile developments in shale gas exploitation with its environmental stewardship. For better or worse, the revolution underway in the US is not likely to be replicated in Europe.

As in many other policy areas, the member states and European citizens are deeply divided over unconventional gas, particularly because of the method used to extract it. Due to the potential environmental risks, fracking poses serious problems for social acceptance. As one can imagine, this has created quite some controversy, as Europeans are deeply divided over both its potential and environmental impact. A public consultation conducted by the Commission in 2012 elicited more than 23,000 responses, revealing substantial opposition from countries such as France on one hand and cautious support from populations in Poland and the UK on the other. In 2011, France became the first EU member state to ban fracking altogether, later converting that into a temporary ban, and since then the UK and Poland have moved forward on exploration, albeit rather unsuccessfully. As expected, the Commission has taken a neutral position on fracking, in line with the mantra that the member states alone are responsible for determining their energy mix. It did issue a recommendation in January 2014 on minimum principles, using high-volume hydraulic fracturing, and has since established a network of experts on the subject to advise it, but it has so far not taken a formal position on the matter other than to pigeonhole it in similar fashion as it does nuclear power; it simply is not their bailiwick.

Beyond the obvious environmental concerns, there also are serious practical obstacles to successfully tapping unconventional fossil resources in Europe, and even marginally replicating the American experience. The first problem is the permit process. Among the EU member states, land ownership does not automatically include ownership of the resources beneath the surface. Such resources are generally owned by the State, unless legally specified otherwise, which hinders private investment and opportunity, and thus, also reduces incentives for the population to support exploration. The next problem is economic viability. Unconventional drilling in Poland, for example, cost as much as three times that in the US according to Schlumberger, the world's largest oilfield-services provider (Strzelecki 2011). Meanwhile, even if European companies could overcome the expenses and regulatory bottlenecks, Europe's oil and gas field sectors lack much of the suitable equipment and experience to exploit what resources might be there. According to a 2013 Ernst and Young report, Europe actively operates fewer than 50 onshore exploration rigs at any one time. By comparison, more than 2000 are in operation in the

US (EYMG 2013). Finally, in the most lucrative markets and locations where unconventional gas resources are most likely to be exploitable – namely, the UK, France, and Germany – the locations of fields are either too close to the underlying water table or located in densely populated areas, rendering exploration itself a political nightmare.

Despite all these obstacles and no sign that the EU is moving towards a unified position on fracking (Poland and the UK have already opposed an EU-wide ban), exploration for unconventional gas is moving forward in Europe. Deposits in the UK and Poland, as well as the Baltic basin, the Pannonian–Transylvanian basin in Hungary and Romania, and the Carpathian–Balkan basin of Romania and Bulgaria (KPMG 2012), have all been identified as potentially rich sources of unconventional gas. Their addition to the EU's energy mix will hardly rescue the EU from its overwhelming dependence on foreign suppliers; although it could alleviate some of the pressure on its Central and East European members in the medium to long term. Nevertheless, shale gas is unlikely to change the overall energy picture in Europe. If it has any impact at all in the near future, it is more likely to follow an evolutionary rather than revolutionary path (EYMG 2013). Therefore, Europe's best option remains a combination of reduced consumption, greater use of renewables, the transformation of its transport and heating sectors to electricity, and above all else, securing the reliable and affordable delivery of external fossil fuel supplies.

The EU's geopolitical challenges

The case of Russia

Russian President Vladimir Putin's vision of a resurgent Russia is tied to state control of energy resources at home and abroad. It is a policy approach directly at odds with the EU's open-market ideals. In the late 1990s, Mr Putin wrote that state control of mineral resources should form the basis for Russia's re-emergence as a global economic and political power, and that such government stewardship of the extractive industries would provide the country with the ability to 'have a large impact on the world commodities market' (Balzer 2006: 51). Although Putin's academic writings predate his career as a politician, his framework for Russian reconstruction has been fulfilled in correlation with his earlier study.

Once in office, he oversaw the renationalization of Russian oil and gas resources and, under his tenure, Russia and Gazprom worked diligently to close bilateral agreements with individual European member states and companies, at the cost of European unity. Seen in the light of Putin's grand plan, Russia's concerns about EU diplomatic efforts to export common rules rooted in the EU's energy acquis, its Neighbourhood Policy, its seemingly unstoppable enlargement process, its attempts to meddle in the political affairs of Ukraine and Georgia, and its efforts to bypass Russia in accessing Caspian Littoral resources, take on added meaning. These areas are not only historically central to Russian security thinking but also an essential part of the country's national energy-export infrastructure, and thus, an indispensable component of Russian capability to project economic power.

East and south-east Europe constitute both the EU's contemporary energy lifeline and its main choke point, and Russia knows this all too well. Most Russian energy exports to Europe flow either through Belarus or Ukraine, although substantial amounts now flow directly from Russia to Germany via the Nord Stream pipeline. Price disputes between Ukraine and Russia led to several brief, but painful, natural gas cut-offs during the coldest winter months between late 2005 and early 2009. A similar dispute with Belarus led to a halt in oil supplies in 2007. Russia's intervention in Georgia in 2008 led to a temporary stoppage of oil flows (from Azerbaijan to Turkey) through that country, and when it seized the Crimea in 2014, the largest importer of Russian gas, Germany, did little more than offer tough talk. As Donald Tusk, the prime minister of Poland, tersely noted at the time, 'Germany's reliance on Russian gas can effectively limit European sovereignty' (Smale 2014). For Moscow and its strategy to keep its gas flowing to Europe and the latter's money flowing back to Moscow, Ukraine's vacillating orientation between East and West is unacceptable.

Moscow's concerns are not unwarranted. The break-up of Yugoslavia, long an ally of Russia, pitted the country against NATO. Later efforts to bestow Kosovo with independence, under UN Security Council Resolution 1244, only heightened concerns of EU and NATO expansion. For Moscow, the move set a precedent for ethnic separatist movements all along the Russian periphery, a concern seconded by Oxford University's Timothy Garton Ash, who, in 2008, noted, 'there will be more Kosovos' (Ash 2008). Indeed, Russian President Dimitry Medvedev alluded to as much in an

August 2008 interview with the BBC (BBC 2008a), only two weeks after calling Russia the region's 'guarantor of peace' (BBC 2008b). Furthermore, Russia is concerned about the spill over effects caused by domestic instability in Ukraine and Belarus, and with good reason. Its southern borders are porous at best, and the 2004 Orange Revolution and 2014 ousting of pro-Russian President Yanukovich in Ukraine reminded Moscow of the vulnerable nature of the countries along its periphery.

Moscow considers most of Eastern Europe, including several states that joined the EU, as pivotal to Russian national heritage and security. Both Ukraine and Belarus have strong cultural ties to Russia, including widespread use of the Russian language (Oliker et al. 2009). The EU's efforts to negotiate an Association Agreement with Kiev directly challenged Russia's so-called sphere of influence and exacerbated Russian concerns about EU intentions. Given the constellation of powers and interests in east and south-east Europe, there should be little wonder why Russia is seeking alternative energy transit routes around both Ukraine and Belarus. Since the region also serves as a possible future transit route for Caspian and Central Eurasian energy resources destined for the EU, Europe can expect heightened tensions with Russia over everything from pipeline routes to election monitoring.

For the EU to secure its short- and medium-term energy needs, it may need to placate Russian concerns and cater to Moscow's demands for regional domination and neighbourly suzerainty. Doing this, however, runs contrary to Brussels' political leanings and interests. Clearly, Europe needs a strategy to deal with its massive eastern neighbour and energy supplier. Public declarations to reduce dependency on Russia are not going to convince the Russians to loosen their grip on the Eastern European transit states. In fact, it may cause the opposite effect, with the additional detriment of dividing the Union.

The race for Caspian resources

The Caspian Littoral states (Russia, Iran, Kazakhstan, Turkmenistan, and Azerbaijan) and the South Asian countries of Tajikistan and Kyrgyzstan are rich in oil and natural gas supplies. Three of the five Caspian countries are former members of the Soviet Union, as are their two eastern neighbours and as far as Moscow is concerned, they are as much part of Russia's sphere of influence

as the countries of Eastern Europe. Russia operates military bases in Tajikistan, Kyrgyzstan, and Kazakhstan, the latter of which hosts Russia's Baikonur Cosmodrome from where Moscow still operates its space-launch facilities. This region was the hotbed of a century-long geopolitical struggle for supremacy between the British Empire and Czarist Russia, stretching from Iran to China (Allworth 1994, Hopkirk 1994). Although Great Britain no longer plays a major role in the region, the game to control Central Eurasia still rages.

Most of the region's resources (drawn in 2012 from proven reserves of circa 40 billion barrels of oil and 28 trillion cubic metres of gas) are exported via pipelines operated by Russian state-owned companies. Independence from Moscow, however, has opened the doors to European, Chinese, and Indian energy interests. Awash in cash from higher energy prices, the governments of Central Eurasia are increasingly toying with the idea of letting the various competitors outbid each other for access.

Europe faces more competition for energy resources in Central Eurasia than anywhere else in the world. Both China and Russia straddle the region. The EU does not. Therefore, in order to secure the region's oil or gas, either Brussels or a collection of EU-based companies, will have to spend a fortune, and do so almost entirely on local terms. Even if Europe were ultimately to succeed in securing contracts and building pipelines, it faces the additional dilemma that the exporting countries may not be able to meet their commitments. Russia and China already have secured long-term purchase contracts for the region's gas, and Beijing is investing in new pipeline networks, while Russia is working to upgrade its existing lines.

There are many security issues in Central Asia. The potential for conflict, if not chaos, cannot be ignored. Russia's long southern border with the region provides multiple points of entry into the country for the smuggling of people, weapons, and illegal drugs, all of which are connected by land routes to Europe. Chechnya is not far away and has been the irritable focus of Russian military adventures since the late eighteenth century, when Czarist Russia took control of the territory from the Turkish and Persian Empires. Moreover, authoritarian leaders that oppress opposition movements and use energy revenues to shore up their military capacities govern many of the region's potential energy suppliers. The region's politics were only complicated by events in Afghanistan. Consequently, the

need for reliable supply lines and the ability to launch emergency search-and-rescue operations provided an impetus for the construction of American military bases scattered throughout the region. As in the case of Ukraine and Georgia, the presence of outside military forces in the region is a challenge to Russian dominance, despite Moscow's initial approval.

The EU is at a distinct disadvantage in Central Eurasia, where Russia is without question the region's dominant military and economic power, and has demonstrated its capability and will to secure its interests across the region repeatedly over the last two centuries. Moscow also remains the primary trading partner for all the former Soviet Republics, although China is encroaching upon Russian economic interests in the region (Sutter 2012). Beijing is clearly capable of securing their interests with money if necessary, whereas Europe appears to be unprepared, and particularly slow, to act on either account. Moreover, Russia, China, and India do not demand domestic political reforms in exchange for their business, a point that strengthens their negotiating position and weakens EU's effort to export its energy acquis.

Meanwhile, the United States is no less interested in the region's energy resources. Although Central Asia is very unlikely to ever supply US markets, boosting regional energy exports free from Russian influence does appear to be part of its two-pronged strategy in the region, to both contain the spread of radicalism emanating from Afghanistan, Pakistan, and Iran on one hand and limiting the spread of Russia's neo-mercantilist approach to international politics on the other (Oliker and Schlapak 2005). Combined with aggressive efforts by China and Russia to secure control over the region's energy resources, the US and EU presence is complicating the delicate balance of power in the region.

Defining the relationship with Turkey

Unlike Ukraine, Belarus, or Georgia, Turkey, which sits at the crossroads between Europe and the resource-rich regions of the Middle East and South-Central Asia, is deeply embedded in the process of negotiating accession to the EU. An associate member of the EU since 1962 (it signed a Customs Union agreement with Brussels in 1995), it has been an official candidate for membership since 1999 and began formal negotiations for accession in 2005. Turkey joined NATO in 1952, and for much of the Cold War, was Europe's

southern line of defence. It controls a vast swathe of the Black Sea basin, and borders Georgia, Armenia, Azerbaijan, Iran, Iraq, and Syria. It has ports on the Mediterranean, Aegean, Black, and Marmara Seas, and it is on the receiving end of pipelines that run from Iran and Iraq. Simply stated, Turkey plays a central role in Europe's strategy to reduce its energy dependence on Russia.

Turkey's role as a transit state in the originally planned Nabucco project, its arrangements with Russia to reroute the South Stream pipeline through to Turkey to avoid crossing Ukraine, and its independent plans to build the Trans-Anatolian Pipeline (TANAP) with Azerbaijan, all point to the central role that Turkey plays in the EU's energy future. TANAP is set to become the backbone of the EU's new Southern gas corridor, supposedly capable of delivering up to 40 billion cubic metres of gas annually for Turkey's western border to key European hubs: in Hungary via the South-East European Pipeline (SEEP), Austria via Nabucco West, and Greece and Italy via the Trans-Adriatic Pipeline (TAP). In welcoming the finalization of the agreement and authorization to begin construction of TANAP, EU Energy Commissioner Günther Oettinger welcomed the Turkish-Azeri project as one that brings the EU 'a step closer to its aim to get gas directly from Azerbaijan and the other countries in the Caspian region' (European Commission 2012h). Yet like so many pipeline projects, there are serious reasons to question such exuberant optimism. Once the gas arrives in western Turkey the question becomes, how do we bring it into the European network? Moreover, when TANAP finally comes online, it will carry much less gas than its backers claim (only 16 bcm, or roughly half of what Nabucco originally promised), and of that, 6 bcm will stay in Turkey, leaving only 10 bcm destined to Europe via TAP and/or others (Belkin et al. 2013, ENTSOG 2013a: 70). Hypothetically, Turkish Stream will further congest the network, adding upwards to 50 bcm, which suggests that regardless of what comes of any of these projects, the EU should be investing heavily in the South-Eastern Corridor's transport capacity.

Officially, Turkey wants to join the EU, albeit its increasingly eastern orientation has become somewhat visible in the past decade. EU member states, however, are divided over Turkish accession, and the arduous process to satisfy all of the EU's demands have left some Turks feeling jilted (Gulmeza 2013, Morelli 2013, Wood 2013). Even if Ankara were to succeed in adopting all of the standards required for accession, it remains unclear as to whether any of

the current EU members will ultimately veto Turkey's accession. If Turkey does ultimately become a member of the EU, it will not solve the latter's energy problems, but it will bring the evolving internal energy market much closer to vast sources of oil and gas right across its south-east border. If it does not join, the EU will have to find a way to avoid a messy divorce. There is always the danger that instead of creating a friendly energy-transit partner, an EU-Turkey break-up could initiate the rise of a profiteering regional competitor. There is good money to be made in delivering gas to the EU, and the profits Turkey could reap from the purchase and resale of regional gas could be an unwelcome, but necessary price of settlement. As a member or not, Europe needs Turkey if it wants unfettered (i.e. not Russian) access to the energy resources of the Middle East and Caspian Littoral states.

By initiating decades-long negotiations with Turkey and by locking the EU into plans to access the resources east of Turkey, Brussels has entangled itself into a geopolitical morass of which there is no easy way out. Turkey is literally Europe's bridge to Asia. Ankara plays an essential security role across the entire Eastern Mediterranean. It is the only real challenger to Russian domination of the Black Sea, and a core intermediary for the Arab-Israeli conflict. These are all issues of essential value to Europe's long-term physical and economic security.

Responsibly exploiting the Arctic

Europe's brightest hope for long-term security of supply may be nearby, just above the Arctic Circle, a vast and uninviting region that encompasses about 6% of the Earth's surface. The United States Geological Survey (USGS) estimates that the Arctic contains as much as 25% of the world's undiscovered fossil fuel resources, including 90 billion barrels of oil and 48 trillion cubic metres of natural gas, 84% of which are to be found under the region's disputed international waters (USGS 2008). If only a quarter of that gas were delivered to Europe, it could secure Europe's fossil fuel needs well into the twenty-second century.

Under debate in the Arctic are both the environmental sustainability of its prospective development and the final delineation of international borders between the circumpolar states. The outcome of the latter is important to the EU because it will determine the region's exclusive economic zones. The 1982 United Nations

Convention on the Law of the Seas (United Nations 1982), grants coastal countries control of resources on and beneath the ocean floor beyond the limits of its national jurisdiction to a distance of 200 nautical miles (370.4 km). If USGS estimates prove even close to correct and Brussels fails to secure Europe's territorial claims, or at least hedge against Russia's, EU consumers may be forced to rely on proxies for future access to the region's vast economic potential. Canada, Denmark, Norway, the US, and Russia are all engaged in Arctic territorial disputes, and both Russia and Canada lay claim to the region's petroleum. Safely accessing the resources in the region will require a high level of international political, commercial, and scientific cooperation. For the EU, it is an opportunity to promote multilateral, if not even global, governance on the exploration and exploitation of undiscovered energy resources.

The EU has already funded several projects, prior to 2008, to prepare for Arctic development, including the Arctic Operational Platform Project and the ICE ROUTES, an ice meteorology study of the North Sea (ECS 2008: 188). Since then, it has stepped up its activities considerably, investing over €1 billion 'to develop the economic, social and environmental potential of the Arctic regions of the EU and neighbouring areas', and between 2007 and 2013, contributed circa €200 million to international research activities in the region (through the Seventh Framework Programme). In 2012, the Commission and the High Representative of the Union for Foreign Affairs and Security Policy, Catherine Ashton, issued a joint Communication, *Developing a European Union Policy towards the Arctic Region: Progress since 2008 and Next Steps* (European Commission 2012c), in which they spelt out EU strategy and concerns in the area. Among these were substantially increased levels of cooperation with the international and multilateral organizations, such as the Arctic Council and the Barents Euro-Arctic Council, of which the Commission is a member. The Commission is also a member of the so-called Northern Dimension, where it works together with Iceland, Norway, and the Russian Federation.

Exploiting the Arctic will offer both opportunities and risks for the EU. Given the stakes in terms of security of supply, possible environmental damage to the Arctic's pristine waters, and the political standing of the EU vis-à-vis its neighbours, EU Arctic policy can be expected to play an increasingly important role in the external dimension of EU energy policy.

Concluding remarks

The EU member states broadly agree on the need for comprehensive energy security, but there remains a lot of unfinished business (both internally and externally) to be resolved. It must bring its internal energy market to fruition, determine which measures are best to improve efficiency and climate change goals, and move forward on building an Energy Union. In order to create a carbon-light economy, it will have to not only evaluate the economic viability of renewables in the long term but also explore the possibility, and recognize the limitations, of increasing indigenous fossil fuel exploration. Along the way, it must also face and resolve a series of internal and external challenges, some of which we have spelt out. Others, as yet unknown of, are certain to appear.

Meanwhile, planned projects around its periphery could greatly reduce EU dependence on Russian gas by 2030. The international LNG market is growing. The Southern Corridor and access to Caspian gas looks to become a reality by 2020. In the process of extending its pipeline reach and increasing the number of routes, the EU is in some cases advertently, and in others inadvertently, challenging the vested interests of some of its neighbours. Smoothing relations with Russia and Turkey, finding the most cost-effective way to access Caspian resources, and determining how to exploit the vast resources of the Arctic without destroying its pristine nature are just some of the most pressing issues the EU faces.

Yet the future is hard to see; just as the fictional Jedi master, Yoda, observed, 'Always in motion is the future'. In terms of energy politics, this future will be a mixture between the further development of 'green energy', the diversification of suppliers, routes, and sources, technological progress, a much more responsible use of energy, and diplomatic prudence. However, fossil fuels will continue to occupy a central position in the near future. Reshaping the technological foundations of our fossil fuel-based societies will take a long time. As impressive as the advance of green energy technology is, it is not a panacea for all our energy needs. Only time can tell whether EU solidarity and technological innovation will withstand the pressures of national interest, bilateral relations, and volatile demand.

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