Craig Mayhew and Robert Simmon

Europe at night

EU Energy Policy

Sustained by Fragile Solidarity, Indispensable for Eurasian Security

BY MEMDUH KARAKULLUKÇU

The European Union (EU) is dependent on imports for over half of its energy consumption.[1] At face value, that implies European energy security is an external challenge that demands the prudent, systematic, and dynamic balancing of energy needs across energy sources and suppliers. That prognosis, however, is deceptively simple and incomplete. Under closer scrutiny, the problem proves to be as much one of internal EU market design and governance as it is an external balancing act.

The recent memory of Russian supply disruptions continues to be a strong factor in shaping EU energy policy. In February of this year, EU energy commissioner Miguel Arias Canete told reporters that, "After the gas crises of 2006 and 2009 that left many millions out in the cold, we said 'never again.'"[2] These episodes left a permanent mark on the EU's energy considerations, especially in Eastern European nations that were affected by the disruptions. If the EU fails to manage the anxiety of these countries about their dependence on Russian gas supplies, the issue has the potential to drive a permanent wedge between them and the rest of Europe.

As the major strategic beneficiary of such a rift, Russia's explicit or implicit actions to widen the rift should be part of the EU's risk calculations. The dynamic of this fault line evolves along two different paths. On the one hand, some countries, like Poland, expect and demand EU solidarity against the Russian supply risk, and are highly sensitive to initiatives by other member states that may be interpreted as weakening such solidarity. Projects like the Nord Stream II gas pipeline—which will bypass Eastern Europe and directly link Germany and Russia—can lead to a serious erosion of trust due to this heightened sensitivity. On the other hand, some Eastern European countries choose to manage their exposure to Russia by forming closer links with it, which can undermine EU solidarity. Hungary's deepening relations with Russia is a case in point

Memduh Karakullukçu is the Vice-Chairman and President of the Global Relations Forum in Istanbul, Turkey.

that raises such concerns. Therefore, energy policy for the EU is well beyond a technical discussion. Mismanaging the process can be highly corrosive to the EU's internal cohesion.

With 28 members and diverse national agendas, EU decisionmaking is notoriously complex. Interests are aligned and national differences are reconciled mainly during or after crises and under pressure. A tradition going back to Jean Monnet characterizes Europe as "the sum of solutions adopted for those crises."[3] This crisis-response mode of evolution can be politically expedient to forge a union of disparate states, and can even be effective under some conditions. But there are circumstances where prevention of and preparedness for potential crises, trends, and stalemates is the more effective and more prudent course of action.

The disruptions to Russian natural gas supplies through Ukraine in 2006 and 2009, followed by the swift deterioration of relations with the Russian Federation, rapidly reminded EU policymakers of the virtues of being a "prepared Union" as opposed to a "crisis Union." Fortunately, neither of these disruptions escalated to a long-lasting energy shutdown.[4] The EU was spurred into action by these crises and also was given a respite to shape its policy at its own pace. In line with its history, it has once again been granted the opportunity to evolve in response to a crisis. The primary challenge is to leverage this crisis-driven momentum to shape and enforce an EU-wide energy policy that can adequately prepare the EU, as a cohesive structure, for energy-related contingencies and adversities.

Ensuring its own energy security and internal cohesion is only part of Europe's challenge in the energy domain, however. Europe also has a broader geostrategic role as part of the North Atlantic Treaty Organization (NATO). Ensuring the openness of global energy trade and preventing locked-in energy dependencies with geostrategic implications are critically important in shaping global relations and alliances. Europe has the political and economic leverage to help shape a more open global trading system for energy, especially in natural gas, where the liquefied natural gas (LNG) and pipeline geometry is still being configured. This is particularly relevant in ensuring that the yet underexploited resources of Turkmenistan and Iran can reach global markets through diverse channels, and that these countries are not locked-in to axes of exclusive interdependence with any single power in Asia. Europe should defend the virtues of globally integrated markets in energy and take the requisite steps in its geographic periphery toward that end.

This broader geostrategic objective of EU energy policy will require strategic planning and action with long-term effects. The "crisis Union" model of policymaking and action is not well suited to fulfill this role. Whether the EU's current internal dynamics will allow for a more proactive policy trajectory is an open question at this point in time. Unfortunately, a failure in this role can have much deeper and long-term adverse implications for global security.

I first turn to the EU's own energy security question in the context of its broader energy policy objectives, and then address its geostrategic role in global, especially Eurasian, energy dynamics.

The European Union's Energy Security: An Internal Governance Challenge?

The EU's energy policy objectives are typically formulated as sustainability, competitiveness,

and security. The relative weighting of these objectives varies across EU members and changes over time. Accordingly, the EU's energy system needs to be dynamic and able to flexibly respond to the changing social preferences over time. This is best achieved through a well-functioning, integrated market where the evolving social choices among the three objectives are affected through price signals. Public policy should ideally work through the market dynamics.[5]

EU energy policy has both an aggregate dimension, where one can think of the EU as a single, united entity, and an internal dimension, where the 28 member states' divergences need to be considered. It helps to separate the problem into these two components to identify the true nature of the EU's energy policy challenges.

Thinking of the EU as a Single Entity

At the EU aggregate level, the sustainability objective was the key driver of the 2008 EU Climate and Energy Package. However, the energy context has changed dramatically since then. The low cost of shale gas drove U.S. energy costs down while the high renewable subsidies and inefficiencies in the EU power market raised electricity prices in Europe. European companies in energy-intensive industries lost competitiveness, and retail customers were unhappy with higher energy costs. As a result, renewables subsidies had to be reconsidered and were pared down in key European countries. Further, the Fukushima disaster in March 2011 caused a strong social reaction against the production of nuclear energy in Europe. Many nuclear plants were closed and overall plans for increased nuclear power as part of the decarbonization effort had to be shelved. Finally, the disruption of the Russian gas flows in 2009 and the escalation of Russian aggression in Ukraine and elsewhere brought gas supply security to the fore.

Given this fast-changing context, the three energy policy objectives have been recalibrated at the EU level. Climate sustainability remains a priority; under the 2030 Framework for Climate and Energy, member states have agreed on specific EU-wide targets for greenhouse gas emissions, renewable energy consumption, and energy savings. The sharing of the burden among member states is not specified and the enforcement mechanism is not in place, but the EU has indicated its collective intent to advance climate sustainability goals.[6] Some progress has been made at the EU level, where the ineffective EU carbon emissions trading scheme is being reformed, including agreement to introduce a market stability reserve in 2019.[7]

The climate sustainability goals target mainly the consumption of the two carbon-intensive fossil fuels, coal and oil. Projections indicate a downward trend in the share of these two fuels in the EU energy mix (Table 1), which would leave nuclear, renewables, and natural gas as the main contenders to meet primary energy needs. Among the three, social and political resistance to nuclear power after Fukushima is limiting the contribution of nuclear energy. Consequently, renewables (including bioenergy) and natural gas are the EU-wide growth areas in power generation and primary energy.

International Energy Agency (IEA) projections for EU energy demand through 2040, laid out in Table 1, reflect these policy choices. In the IEA's two scenarios, the shift to renewables (including bioenergy) and natural gas is clear. The "new policies" scenario, which reflects commitments made at the 2015 Paris

Climate Conference—also referred to as COP21—unsurprisingly indicates a more rapid shift to renewables than the "current policies" scenario. It should also be noted that beyond these relative shifts in the energy mix, the EU also has an ambitious efficiency improvement target, whereby absolute energy consumption is expected to decrease over time.

Renewables

Although renewables costs are on a downward sloping curve, technical and regulatory issues and the low price of fossil fuels still limit their competitiveness. Public subsidies to expedite their deployment, which are then reflected in consumer prices, are counterproductive both economically and politically. High electricity costs erode the competitiveness of industries in subsidizing countries and harm their national economies. Politically, the link between subsidies and high electricity bills weakens the electoral support for renewables. A faster pace of renewable deployment under such economic and political pressures will demand new policy initiatives and technology advances.

The first factor is the integration of power grids. Because renewables do not generate steady power, they need to be balanced out across a diverse geography through interconnections and supported with traditional gas-, coal-, or nuclear-powered plants, which generate stable and reliable electricity. To the extent that EU member state power grids are

Table 1. EU Energy Demand Composition Projections[8]

Energy Demand-Share (%)

	IEA New Policies Scenario				IEA Current Policies Scenario			
	2013	2020	2030	2040	2013	2020	2030	2040
Coal	18	16	11	7	18	16	13	11
Oil	32	30	26	23	32	30	27	24
Gas	24	24	27	28	24	24	29	31
Nuclear	14	14	14	15	14	14	12	11
Hydro	2	2	2	3	2	2	2	2
Bioenergy	9	11	13	15	9	10	12	13
Other Renewables	2	4	7	9	2	4	5	7

interconnected, broader and faster renewables deployment will become technically more feasible and commercially more viable. A second factor is storage technology. If battery technology can make significant advances, the intermittent nature of renewables will be less of an obstacle. Accelerating the decrease in the cost of renewables is a third issue. Solar and wind energy costs are on a downward slope, and if the cost reductions are rapid, deployment will be easier and faster. A fourth factor lies at the intersection of industrial policy and energy policy. To the extent that the EU or member states position renewables technologies as a global export opportunity for European industry, increasing deployment and achieving market scale will be a strategic decision to support EU industrial presence in this domain. EU Commission President Jean-Claude Juncker characterizes the EU's focus on renewable energy not only as a climate change policy, but also as "an industrial policy imperative."[9] In renewables technologies, the cost improvements with market scale are well recognized.[10] Chinese competitors have a strong advantage in this respect, but some EU economies are still contenders.

Although the overall upward direction of renewables' share in the EU energy mix is almost certain in the coming decades, the exact path and pace of the change will be determined by such policy and technology dynamics, as well as by the evolving social preferences of the public.

Natural Gas

Natural gas is the other energy supply source that is projected to increase its share in EU energy consumption. The carbon content of gas is lower than coal and oil. It is the favored

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Europe will have to embrace innovation and technology if renewable energy is to be successful in the future.

fossil fuel for sustainability purposes. However, unlike coal and oil, natural gas is traded in a quasi-integrated global market. The bulk of gas is still traded through pipelines, which fragments global natural gas trade into three separate markets in Asia, Europe, and America. Increasing volumes of LNG that can be traded among these markets is gradually limiting the price divergence among them and expediting their integration. Nevertheless, pipeline delivery still dominates international gas exports. Unlike LNG, pipeline trade creates interdependencies between pipeline-linked suppliers and consumers. Therefore, the bulk of natural gas trade still entails significant supply security concerns and requires a more strategic approach.

The LNG and pipeline channels also differ in terms of cost and pricing structures. Liquefaction, transport, and regasification bloat LNG prices. On the other hand, pipelines are more economical over short distances, but not feasible for longer distances. The EU's gas supply plans and policies involve both LNG and pipeline-delivered resources. The balancing between the two requires a careful consideration of relative security and cost calculations.

At the aggregate EU level, there is ample supply channel redundancy for natural gas. The EU has a total pipeline capacity of 422 billion cubic meters (bcm) from Russia, Norway, Algeria, and Libya, as well as a 184bcm LNG capacity, situated predominantly in Western Europe. The total import capacity of 606bcm, with an additional storage capacity of 91.9bcm, compared to imports of 305bcm in 2014,[11] points to significant redundancy at the aggregate EU level (Table 2).

Some of the pipeline suppliers provide high volumes to the EU, however, and these supply relations are not immune to political and security risks. In particular, the Russian Federation is a major supplier with strong political interests and motives. Algeria and Libya, other important providers, face serious security challenges. A prudent security stance requires the aggregate EU system to be resilient to the possibility of technical or political disruptions from one or two main suppliers. Moreover, natural gas demand is not stable, but fluctuates throughout the year, increasing during the winter. Strict supply security criteria should ensure the resilience of the EU system when faced with major supply disruptions at its peak demand.

Both official and independent studies indicate a reasonable level of EU resilience against major disruptions, with certain caveats.[12] The main problem is that even though the EU can shift to alternate supply channels or tap into stored gas and maintain resilience at the aggregate EU level, the incompleteness of the EU's internal market network—to be discussed in detail in the next section—causes vulnerabilities in Eastern European states. The EU's current gas supply risk is predominantly an internal integration failure, rather than an aggregate vulnerability.

When we extend the time horizon of the EU's aggregate gas supply security, the analysis becomes inevitably less precise because it requires projections in a complex and changing context. The IEA projects that EU gas imports will increase from 298bcm in 2013 to 367bcm in 2025[13] under the New Policies Scenario. This projected increase in imports will significantly burden and reduce the redundancy and flexibility of the existing infrastructure, especially because of Russia's disproportionately large share in the imports and supply channels. Therefore, when the EU's aggregate

gas supply security is assessed for a longer horizon, it becomes more critical to plan additional capacity for accessing new resources.

With respect to new pipelines, North Africa, the Caucasus, and the Middle East are the possible options. Algeria and Libya already supply gas to the EU, but the security risks in this region undermine their reliability as backup sources in the near term. Accessing new resources from Azerbaijan, Turkmenistan, Iran, and Iraq through the Southern Gas Corridor (SGC) would diversify the EU's

TABLE 2. EU Gas Infrastructure: Import Pipelines, LNG, and Storage[14]

Pipelines (bcm/year)

	Capacity	Imports in 2014	Utilisation Rate
Russia	230	119	51%
Norway	127	101.1	79%
Algeria	54	19.5	36%
Libya	11	6	54%
TOTAL	422	245.6	58%

LNG (bcm/year)

	Capacity	Imports in 2014*	Utilisation Rate
Spain	60.2	17.6	29%
UK	50.7	18.5	36%
France	25.3	10.1	39%
Italy	15.3	7.2	47%
Netherlands	12	0.9	7%
OTHERS	24	5.0	21%
TOTAL	183.5	59.3	32%

*Net of re-exports

Storage (bcm)

	Capacity	Level as of Oct 2015	Utilisation rate as of Oct 2015
TOTAL	91.9	75.8	82%

portfolio. These countries, however, are also rife with myriad legal, political, and security challenges, and the timing of introducing new backup supplies is highly uncertain.

Given the timing uncertainty, it is better to create flexible infrastructures that can attract additional sources from this region if and when they become available. One such project with that vision is the Trans-Anatolian Natural Gas Pipeline (TANAP). TANAP will carry Azeri gas through Turkey to link with the Trans-Adrian Pipeline (TAP) at the Turkish-Greek border. This pipeline, which is expected to be operational in 2019, will initially carry 6bcm to Turkey and 10bcm to Europe each year.[15] As it currently stands, this volume is helpful but will not qualitatively transform the EU's gas supply security problem or its reliance on Russia. The pipeline's appeal is that it can be scaled up to attract the broader resources of the region if and when other sources become accessible. Of course, alternative pipelines through Turkey or successful LNG hubs in the country may also provide the requisite flexibility and the motivation for these countries to channel their resources to the gas markets.

As this nascent SGC evolves at an uncertain pace, the EU's other alternative is to diversify its gas supplies through the LNG markets. The planning for new pipelines and LNG supplies requires striking a balance between security and cost implications. The EU has already invested in sufficient LNG capacity such that it can replace much of its pipeline-delivered gas through LNG supplies and expand LNG facilities to create further redundancy as its import demand grows. The problem is that LNG supplies have inherent costs reflecting the liquefaction, transport, and regasification stages of the supply. In addition, the EU faces stiff competition from Asian markets for LNG, which can push the costs to very high levels. Achieving supply security through LNG can be costly. Hence, the final strategy has to balance the security and cost implications of new pipelines and new LNG supplies.

Strategically, having access to both pipeline and LNG supplies will bolster the EU's bargaining position. Even if the EU does not consume high volumes of LNG, simply having the flexibility to shift to LNG will limit the EU's pipeline suppliers' freedom to increase prices.[16] However, to the extent that global LNG prices are high or LNG is difficult to access at short notice, the disciplining quality of LNG supplies on pipeline supplies will be restricted. The evolution of LNG markets and gas price dynamics are critical for the EU as it plans its incremental supply channels.

With the introduction of new U.S. and Australian LNG in the market, LNG supplies are likely to be ample until 2020.[17] Investment decisions for the liquefaction plants currently under construction were made at a time of high LNG prices. Given the less-than-expected demand growth in this decade, LNG prices are likely to be subdued for a few years, reflecting excess capacity. By the same token, the current low LNG prices may undermine new LNG investment plan, and lead to a shortage of LNG supplies and high prices after 2020 as demand recovers.[18]

The EU's aggregate resilience to possible pipeline supply disruptions will therefore benefit from a favorable LNG environment until 2020. If the new LNG investments overreact to current price signals, however, the context of abundance may not be sustainable in the longer run. The current LNG context appears to provide a window of time for planning and action to EU policymakers as they prepare for the next decade.

To summarize, at the aggregate level, the EU's dynamic calibration and balancing of security, competitiveness, and sustainability goals are shaping its energy priorities. The current policy of reducing coal and oil consumption, limiting nuclear power, and increasing the share of renewables, bioenergy production, and natural gas in the energy mix is a viable objective. The costs and industrial competitiveness risks of deploying renewables need to be controlled through market integration, new technologies, and effective market functioning. With respect to natural gas, both supply security and cost issues need to be considered. In supply security, the EU has sufficient redundancy in aggregate supply channels in the near-term, but stress tests indicate local vulnerabilities due to lack of energy market integration. In the medium- to longer-term, the EU's projected gas import growth implies the need to access new resources for aggregate resilience. The EU will have to consider both increased LNG supplies and new pipeline access to suppliers, especially in the Caucasus and the Middle East. The former requires a close monitoring of cost dynamics in the global LNG markets, while the latter demands diplomatic skill, patience, and investment in flexible structures.

The immediate challenge for EU energy policy, both in pursuing climate goals through renewables and in ensuring supply security, is primarily an intra-EU politics and market design problem.

Thinking of the EU as a Fragmented Market of 28 Member States

Interconnecting the EU's power and gas networks has been a clear priority of the alliance for advancing climate sustainability, competitiveness, and supply security. Linking power and gas markets has significant market efficiency benefits. Integrating electricity markets to benefit from diversification gains among intermittent energy sources across borders has become critical, especially with the advent of renewables; expanding renewables in the EU at competitive prices will demand power grid interconnections. The integration of markets is also crucial for gas supply security. Although the EU as a whole has supply redundancy, there are geographic islands in Eastern Europe and the Balkans where countries are still partially vulnerable to Russian gas disruptions. The obvious solution is to integrate these markets regionally and with the rest of Europe through additional pipelines as well as by upgrading existing pipelines, which will allow gas to flow in both directions.

EU policymakers have been aware of these deficiencies for a long time, but individual governments have maintained a strong preference for keeping energy policy within their national purviews. Member states have widely varying regulations and tax regimes in the energy domain, reflecting their divergent energy priorities and policies. The share of taxes in the final price of power can be as high as 57 percent in Denmark and as low as 5 percent in Malta.[19] As a result, the cost of electricity can differ significantly among member states, making cross-border electricity market integration very difficult. The absence of coherent market signals and regulatory practices also complicates and hinders cross-border infrastructure investments.

Similarly, most member states prefer to manage their gas import negotiations at the national level. Recent attempts by the European Commission to mobilize the EU's collective leveraging power in gas-purchase agreements, especially from Russia, have met

strong resistance from member states. Whereas Poland supports the idea as a supply security measure, Hungary, the Czech Republic, and Slovakia are unwilling to antagonize Russia with collective action.[20] Strong national instincts in European energy security work to the benefit of Russia, which can conveniently leverage national differences to deepen the rifts in trust among EU member states.

As in other policy domains, however, European energy policy is being forged through crises. Since the 2006 and 2009 gas supply disruptions, the European Commission has taken steps to advance EU-wide energy policies. Progress so far has been slow and integration is still not complete, mainly in parts of Eastern Europe.

The EU's Third Energy Package, enacted in 2009, was an important step. Its main goal was the integration of gas and electricity markets. The EU was given the authority to separate ownership of energy supplies from ownership of transmission networks to prevent energy companies from having excessive market power in gas and electricity. Under this policy package, retail markets were made more transparent, a cooperation mechanism among independent national regulatory authorities was established, and a platform for coordinating cross-border technical standards was launched.

The EU's 2020 Climate & Energy Package was another EU-wide policy enacted in 2009. It set goals for renewables, carbon emissions, and efficiency. Nevertheless, climate policy remained a national concern and member states set their own targets, only to be monitored by the Commission. Again, after the 2009 disruption, gas supply security became an even more pressing issue. The Third Package enabled the EU to block the expanding control of European gas pipelines by Gazprom, Russia's major gas company. Ownership of both the supplies and the pipelines would have given Russia undue leverage, especially in Eastern Europe. Russia eventually canceled the South Stream project that would have delivered gas to captive states in Eastern Europe. Although the EU Commission does not have the authority to determine collective energy policy, its ability to enforce EU-wide regulatory requirements proved to be an effective tool to counter Russian attempts to control European gas markets.

In 2015, the Commission announced its Energy Union initiative to complete the market integration work. EU countries also agreed on the 2030 Climate and Energy Framework. The legislation for these efforts is not yet enacted so their effectiveness is yet to be seen, though investments in the infrastructure for connecting markets continue, with financial support from the EU's Connecting Europe Facility [21] and the European fund for Strategic Investment.[22]

Although these EU policy initiatives were and are moves in the right direction, a fully integrated energy network and market has not emerged, in short due to the member states' insistence on keeping energy policy decisions under their national purviews. There are still missing infrastructure links in the European gas network, and harmonization of regulatory and tax rules is incomplete.

The EU as a united entity has built significant resilience in energy supplies, but the internal fragmentation and governance challenges continue to bedevil some member states' energy security and hence the EU's strategic unity against Russia.

Revitalizing European Solidarity is the Key to Effective Energy Policy

Overall, the risk of an EU-wide energy supply crisis is reasonably low. The remaining local risks can be managed as long as the core solidarity of the EU project remains intact and member states are willing to share the burdens of a crisis.

The European Commission was asked to systematically test the resilience of the European gas system and produced a report detailing its findings in 2014.[23] The analysis indicates that parts of Eastern Europe would suffer in the event of Russian supply interruptions. However, the existing interconnections would allow a sharing of the sacrifice. Cooperative solutions among neighboring states can spread the shortages across borders and moderate the impact on any single country. The burdens of the imperfect integration problem can be shared by transforming a technical problem into a political solidarity issue.

In line with this diagnosis, the European Commission has recently proposed the revised Regulation on Security of Supply as part of its Energy Union agenda, which advances a mechanism for "mandatory solidarity" among neighboring states. [24] Under this scheme, the EU member states will be divided into regional groups within which they will work together for supply security. When a state in a group is faced with a supply disruption, other members in the group will prioritize the selected consumers (households, essential social services, and district heating installations) of the state in need over their own less urgent national customers. The receptiveness of the member states to this proposal will indicate the willingness for a true energy union among the members.

As the European Commission works on such reasonable technical measures, the larger risk facing the EU is the corrosion of mutual trust and commitment among the members, which is the prerequisite for any of these collective proposals. The sharp divergence among key members' reactions to the Nord Stream II project is an alarming signal about the erosion of that mutual trust. Nord Stream II, with 55bcm capacity, will bypass Eastern Europe and deliver Russian gas directly to Germany. It does not reduce the EU's Russian supply risk, but it does not increase aggregate vulnerability either. On the margin, it provides redundancy benefits that could be useful in case of technical problems in other Russian pipelines.

The problem is that Nord Stream II allows Germany and Western Europe to unbundle their Russian gas supplies from Eastern Europe. It weakens structural interdependence between Germany and Eastern Europe and, in the absence of solid mutual trust, can undermine solidarity. The intensity of the reaction and resistance to the project from Eastern European countries, led by Poland, indicates a deep fault line in mutual trust.

Normally, European crises lead to new physical infrastructure and institutional/regulatory norms that incrementally shift the baseline from independent nation states to a union of interdependent, entangled members. Nord Stream II can be perceived as a move in the reverse direction where a new infrastructure could serve as a German hedge in a disentanglement scenario. This perception demands particular attention, especially in the context of deepening rifts between Germany and Eastern Europe related to the refugee crisis.

The EU's energy policy and security framework is an imperfect patchwork that moves erratically, but until now it has moved in the

right direction to advance, albeit slowly, EU efficiency and resilience. Despite its imperfections, Europe still has the wherewithal to adapt in case of a new supply crisis. The bigger challenge is the broader erosion of trust among member states. National energy policies should not be allowed to deepen or facilitate these rifts. Russia would be the clear beneficiary of the erosion of trust between Eastern Europe and the rest of the EU.

Europe has been forged through crises until now. The next energy crisis should not be the catalyst for taking it apart.

A Reluctant Transatlantic Partner: Aligning the EU's Energy Policy and Its Geostrategic Role

For an economy and a landmass as large as the EU, energy policy cannot be considered narrowly and in isolation from the rest of the world. Thinking strategically about the global energy context and its wider geostrategic implications, and shaping policy actions accordingly should be an integral part of Europe's outlook in the energy domain.

Unlike its internal policy evolution, shaping the global context requires consideration and action prior to crises. It is important to take steps to shape the energy context to forestall potential adverse developments and to facilitate the natural progression of favorable trends. Unfortunately, Europe's political structures and temperament do not at present appear amenable to shaping and executing such a united, forward-looking strategy. However, the EU's capacity for joint strategic action is needed beyond Europe. It is in the interest of the transatlantic community and of an open, integrated global order for Europe to rise to the occasion.

In the climate domain, pursuing ambitious goals is a well-established European objective, and this ambition is very much situated in the global context. Such a policy stance

Samuel Bailey

The recent Russia-Germany pipeline negotiations, Nord Stream II—depicted in the map above—would weaken Eastern European energy security.

gives the EU moral authority and leadership in the discussions around this critical issue. Leading the world away from carbon emissions benefits the EU not only in its climate goals, but also with respect to its cost and security concerns. Decreasing or slow-growing global demand for fossil fuels will structurally increase the bargaining position of importers, including the EU, in the fossil fuel markets, and the upward pressures on prices will be moderated. It is in the EU's interest to use its internal energy policies and global climate agreements as mutually reinforcing factors to advance its larger strategic objective of global transformation away from fossil fuels.

This larger transformation will take decades, however, and until then the EU will have to function in a world dominated by the economics and politics of fossil fuels. As a high-volume importer of fossil fuels, the EU benefits from open, integrated global markets and has a strong interest in preventing price hikes due to supply shortages or supplier manipulations.

Oil markets are globally integrated and relatively well-functioning. The EU's strategic goal in oil should be to ensure the preservation of this market structure. On the price front, the world is currently going through a supply abundance phase and there is downward pressure on oil prices. However, the current price cycle might cause underinvestment in oil extraction, which could underpin the next surge of prices. The EU has a vested interest in closely following these global supply/demand trends and using its global political and economic clout to help maintain steady supplies to meet evolving demand. Predicting and shaping oil prices is notoriously difficult for any actor, but the gradual global shift away from fossil fuels and the increasing availability of substitutes may allow for a higher level of moderating influence in these markets.

Natural gas markets require a more elaborate strategic calculation. For its own supply security, the EU faces two strategic challenges. The first one is its need for a well-supplied, integrated global LNG market. The LNG markets allow the EU to limit the bargaining power of its pipeline suppliers, both politically and economically. As long as the EU has sufficient redundancy in its LNG facilities, buying Russian or Algerian pipeline gas becomes less of a supply risk. Similarly, as long as the LNG market is well-supplied and the prices are competitive, the pipeline supplies cannot be excessively priced and the economic risk will be limited. Well-functioning global LNG markets are critical for the EU to achieve both supply security and cost minimization.

The second challenge relates to the design of pipeline linkages in Eurasia. As the EU tries to diversify away from Russia, the most promising new suppliers to the east are Iran, Turkmenistan, and Iraq, with 18.2 percent, 9.3 percent, and 1.9 percent of total global proven reserves, respectively.[25] The TANAP link will carry Azeri gas to Europe, but Azerbaijan has much smaller reserves, at 0.6 percent of the global total.[26] The vast gas resources of Iran are underdeveloped, and Turkey is the predominant export market for Iran's pipeline gas.[27] Turkmenistan exports much below its vast potential and has pipeline links to China, Russia, and Kazakhstan. Iran and Turkmenistan's access to global markets can transform the gas market dynamics. As should be expected, growing Asian markets like China and India are eyeing these resources. Russia, on the other hand, would prefer to impede or at least slow down the flow of gas from these suppliers in order to avoid competition.

The significance of the pipelines from these markets goes beyond EU supply security. Pipeline linkages create locked-in relations between countries that can have an impact beyond energy and shape deeper alliances. Therefore, the geometry of pipelines from the Caucasus and the Middle East to Europe and Asia will be important in shaping the evolving geostrategic balance in Eurasia.[28][29]

In this complex context, a simple strategy for the EU would be to aggressively pursue the SGC and build pipeline links to Turkmenistan, Iran, and possibly Iraq. This would be too narrow a strategy in planning for the emerging Eurasian energy architecture, however. The EU's import demand cannot substitute for growing Asian demand. The economic growth in Asia indicates that the expected increase in import demand from the region will be much larger than the respective increase from the EU (Table 3). Thus, even if the EU secures some pipeline supplies for itself through the SGC, the overall pipeline geometry is likely to be dominated by the trade between Iran, Turkmenistan, and the big Asian powers.

A possible strategy in planning for emerging Eurasian pipeline relations would be to pursue multiple pipelines and customers as an overarching goal and to ensure that new pipelines will connect the Caucasus and Middle East to the vast Asian landmass, including the Indian subcontinent and China. To the extent that the supplier countries can access more markets in which to sell their gas, the structural dependence relations with single countries will be weakened. Unfortunately, Asian rivalries and alliances are complex, and building multiple pipeline routes to prevent geostrategic dependencies will require vision, persistence, diplomacy, and patience.

The alternative, or parallel, approach to multiple Asian pipelines would be to link the key suppliers in the Middle East and the Caucasus to new LNG hubs where they can access the global gas market, rather than being limited to pipeline customers. In the absence of LNG market access, pipeline sales from the

TABLE 3. Natural Gas Import Projections by Region[30]

IEA New Policies Scenario - Net Imports (bcm)

	2013	2025	2040	2013-2040 Increase
EU	298	367	387	89
China	52	192	238	186
Japan and Korea	177	153	155	-22
India	18	51	84	66
Other Asia	8	22	88	80

Caucasus and the Middle East to the EU will probably remain small relative to the region's growing exports to Asia. However, having access to LNG hubs would allow these suppliers to also compete for the growing LNG demand from the EU. The combined pipeline and LNG sales to the EU could underpin a more balanced orientation between Asia and Europe. The EU's current strategy vis-à-vis the new suppliers in this region is dominated by the SGC paradigm. However, the pipeline geometry outside this area is a larger strategic challenge, and the EU, together with the United States, has a role to play in ensuring the spread of open, integrated energy markets toward Asia. Diversifying demand from the region with multiple pipelines supplying the EU, India, and China is one possibility, but the low pipeline demand of the EU and the political difficulties in Asia pose serious impediments. Linking these suppliers to the much larger and diverse LNG markets can be a more robust strategy for avoiding geopolitical lock-ins.

In this context, Turkey has a key role to play in both the "multiple pipelines" and the LNG hubs strategies. For the transatlantic alliance, Turkey's role and geographic position have been so far formulated as being useful for diversifying the EU's import channels and serving as an alternative sales channel for the suppliers in the region. This formulation positions Turkey as a pipeline corridor and is consistent with the "multiple pipelines" strategy.

As argued previously, the potential pipeline volumes to the EU are too limited to make a geostrategic impact relative to the allure of the fast-growing Asian demand. One or two high-volume LNG hubs in Turkey would leverage its geographic proximity to all of these suppliers and have the potential to attract much larger volumes from the region. Functioning LNG hubs would become appealing sales nodes for new suppliers as well as established suppliers who wish to increase their exports. Given the timing uncertainty about when resources from Iran, Iraq, Turkmenistan, and even the eastern Mediterranean will become accessible, an LNG hub offers the additional flexibility to scale up if and when new resources become available.

To summarize, the EU is too significant a player to focus exclusively on its own energy objectives. It needs to be a proactive partner in the transatlantic community for shaping long-term energy relations in Eurasia as well as in ensuring the functioning of global markets in oil and LNG. Its sizeable energy market and its gas demand are strategic instruments that can be leveraged to advance an open trading system in natural gas and to prevent locked-in energy trade relations with potentially adverse geostrategic implications.

Conclusion

The EU depends on imports for over half of its energy needs, predominantly in oil and gas. It has to chart a path for its energy policy that balances the competing priorities of security, competitiveness, and sustainability within the bounds of this import-dependent constraint. The EU's current strategy is to shift its energy mix away from oil and coal in favor of renewables and natural gas. This strategy is viable to the extent that power and natural gas markets are seamlessly integrated across the continent. Unfortunately, member states are highly protective of their sovereignty in energy policy, which has hampered and delayed the formation of unified EU energy markets.

The security risk of this fragmentation is not symmetric across the EU. Eastern European

members remain significantly more exposed to gas supply risks from Russia than the rest of the EU, causing a divergence in sensitivities and undermining solidarity. The EU can and should decisively invest in mechanisms to ensure solidarity among its members. The alternative—where eroding solidarity motivates stronger national policy reflexes, undermines the EU's energy market integration, and thus weakens Eastern European energy independence vis-à-vis Russia—is a vicious cycle that cannot be ruled out. Russia will be the clear beneficiary of such a trajectory. The geostrategic implications of a lasting divergence between Eastern Europe and the rest of the EU in energy security perceptions are deep and alarming. EU solidarity with regard to energy security has to be preserved as a strategic priority.

Although the EU's internal energy security challenges are real and complex, it is too significant an actor to focus exclusively on its own energy concerns and remain aloof to evolving Eurasian energy relations. Energy policy decisions have repercussions well beyond the confines of basic energy objectives. They shape and are shaped by the wider geostrategic context. Captive energy trade links, especially in pipeline-delivered natural gas, can impose structural dependencies that can underpin the emergence of potentially unfriendly security alliances. It is imperative to ensure that the Eurasian energy geometry does not evolve toward such dependent relations, but instead leads to an open trading system.

The EU has a crucial role to play in this process. While it has been skillful and fortunate in shaping its own energy policies through crises, this larger global role demands a "proactive Union" that tries to shape the Eurasian context before the context constrains its course of action. If the EU does not rise to this occasion, the gradually emerging context may no longer offer the flexibilities that have until now allowed it to adapt at its own pace to the crises it has faced.

To remain the master of its destiny and not become hostage to an adverse energy geometry, the EU's energy thinking will have to broaden its geographic reach and purpose. The costs and risks of EU complacency are simply too high for itself and its allies. PRISM

Notes

[1] The EU was dependent on imports for 53 percent of its consumption in 2013. See: "Energy production and imports," *Eurostat*, May 2015, <http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_production_and_imports>.

[2] Christian Oliver, "EU strengthens resilience to Russian gas supply threats," *Financial Times*, February 16, 2016, <http://www.ft.com/intl/cms/s/0/ff0e7946-d4bc-11e5-8887-98e7feb46f27.html#axzz45gfW5Lu3>.

[3] In his autobiography (*Mémoires*, Paris: Fayard, 1976), Jean Monnet said that "Europe will be forged in crises, and will be the sum of the solutions adopted for those crises."

[4] There have been other disputes with Ukraine and disruptions in the supplies to Ukraine after 2009. However, these episodes did not escalate to significantly impact EU contries.

[5] Georg Zachmann, "Elements of Europe's Energy Union," *Bruegel Policy Brief* , September 2014, 3-4, <http://bruegel.org/2014/09/elements-of-europes-energy-union/>.

[6] European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Policy Framework for Climate and Energy in the Period from 2020 to 2030," *O.J.* C, January 22, 2014,

[7] "Reform of the EU emissions trading regime: At a glance," *European Union*, Last modified December 2, 2015, <http://www.consilium.europa.eu/en/policies/climate-change/reform-eu-ets/>.

[8] International Energy Agency, *World Energy Outlook* 2015 (Paris: OECD/IEA, 2015): 604.

[9] Jean-Claude Juncker, "A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change." (speech at the European Parliament Plenary Session, Strasbourg, July 15, 2014), *European Commission Press Release Database*, 7, <http://www.eesc.europa.eu/resources/docs/jean-claude-juncker---political-guidelines.pdf>.

[10] E.g. Swanson's Law is a useful observation supporting the scale effects. Price of solar photovoltaic modules tends to drop 20 percent for every doubling of cumulative shipped volume.

[11] Simone Tagliapietra and Georg Zachmann, "Rethinking the Security of the European Union's Gas Supply," *Bruegel Policy Contribution*, (January 2016), 3, <http://bruegel.org/2016/01/rethinking-the-security-of-the-european-unions-gas-supply/>.

[12] European Commission, "Communication from the Commission to the European Parliament and the Council on the short term resilience of the European gas system: Preparedness for a possible disruption of supplies from the East during the fall and winter of 2014/2015," *O.J. C*, October 16, 2014, <https://ec.europa.eu/energy/sites/ener/files/documents/2014_stresstests_com_en.pdf>.

[13] International Energy Agency, *World Energy Outlook 2015* (Paris: OECD/IEA, 2015), 216.

[14] Simone Tagliapietra and Georg Zachmann, "Rethinking the Security of the European Union's Gas Supply," *Bruegel Policy Contribution* (January 2016), 4, <http://bruegel.org/2016/01/rethinking-the-security-of-the-european-unions-gas-supply/>.

[15] Isabel Gorst, "Construction of TANAP pipeline begins in Turkey as EU and Russia spar for upper hand," *Financial Times*, March 18, 2015, <http://blogs.ft.com/beyond-brics/2015/03/18/construction-of-tanap-pipeline-begins-in-turkey-as-eu-and-russia-spar-for-upper-hand/>.

[16] Russia's willingness to renegotiate the price of its gas supplies to Lithuania after the launch of the Klaipeda LNG terminal confirms this simple shift in bargaining positions.

[17] Bud Coote, "Surging Liquefied Natural Gas Trade: How US Exports will Benefit European and Global Gas Supply Diversity, Competition, and Security," *Atlantic Council*, January 20, 2016 <http://www.atlanticcouncil.org/publications/reports/surging-liquefied-natural-gas-trade>; International Energy Agency, *Medium-Term Gas Markets Report 2015: Market Analysis and Forecasts to 2020* (Paris: OECD/IEA, 2015).

[18] See International Energy Agency, *Medium-Term Gas Market Report 2015* (Paris: OECD/IEA, 2015): 12-14.

[19] Christian Oliver, "New EU energy chief shifts focus to building common power market," *Financial Times*, November 13, 2014, <http://www.ft.com/intl/cms/s/0/d1444394-6a71-11e4-8fca-00144feabdc0.html#axzz45sO4nzFp>.

[20] Christian Oliver, "Member states balk at EU plan to vet Gazprom contracts," *Financial Times*, March 18, 2015, <http://www.ft.com/intl/cms/s/0/d3fa68dc-cd7e-11e4-a15a-00144feab7de.html#axzz45sO4nzFp>.

[21] The European Commission has designated 195 Projects of Common Interest that will serve internal energy market integration and has allocated

E5.35bn for the 2014-2020 period to support these projects.

[22] "Commission unveils key energy infrastructure projects to integrate Europe's energy markets and diversify sources," *European Commission*, November 18, 2015, <https://ec.europa.eu/energy/en/news/commission-unveils-list-195-key-energy-infrastructure-projects>.

[23] European Commission, "Communication from the Commission to the European Parliament and the Council on the short term resilience of the European gas system: Preparedness for a possible disruption of supplies from the East during the fall and winter of 2014/2015," O.J. C, October 14, 2014, <https://ec.europa.eu/energy/sites/ener/files/documents/2014_stresstests_com_en.pdf>.

[24] European Commission, "Proposal for a Regulation of the European Parliament And of the Council concerning measures to safeguard security of gas supply and repealing Directive 2004/67/EC," O.J. C, 2009.

[25] British Petroleum, "BP Statistical Review of World Energy June 2015" BP, (June 2015), 20, <https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf>.

[26] Ibid.

[27] Sara Vakhshouri, "Iran's Energy Policy After the Nuclear Deal," *Atlantic Council*, November 16, 2015, 10, <http://www.atlanticcouncil.org/publications/reports/iran-s-energy-policy-after-the-nuclear-deal>.

[28] Micha'el Tanchum, "A Post-Sanctions Iran and the Eurasian Energy Architecture: Challenges and Opportunities for the Euro-Atlantic Community," *Atlantic Council*, September 25, 2015, <http://www.atlanticcouncil.org/publications/reports/a-post-sanctions-iran-and-the-eurasian-energy-architecture>.

[29] Maria Pastukhova and Kirsten Westphal, "A Common Energy Market in the Eurasian Economic Union: Implications for the European Union Energy Relations with Russia," *SWP Comments*, February 2016, <http://www.swp-berlin.org/en/publications/swp-comments-en/swp-aktuelle-details/article/ein_gemeinsamer_energiemarkt_in_der_eurasischen_wirtschaftsunion.html>.

[30] International Energy Agency, *World Energy Outlook 2015* (Paris: OECD/IEA, 2015): 216.

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