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# Baku and Brussels Deepen Energy Cooperation

## What to Expect from the Renewed Strategic Partnership?

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While the negotiations between Azerbaijan and the European Union on concluding a new comprehensive partnership agreement are underway, the two sides have recently reached another important milestone in the field of energy cooperation. On 18 July 2022, EU Commission President Ursula von der Leyen and Azerbaijan's President Ilham Aliyev signed a new Memorandum of Understanding (MoU) on A Strategic Partnership in the Field of Energy. In the six-section document, which outlines a comprehensive road map for bilateral cooperation in this crucial area, the two sides officially recognized the intention to "support bilateral trade of natural gas, including through exports to the European Union, via the Southern Gas Corridor, of at least 20 billion cubic meters of gas annually by 2027, in accordance with commercial viability and market demand." Baku and Brussels also agreed on the importance of promoting renewables, green hydrogen, and energy efficiency, as well as on the need to address issues related to methane emissions and environmental protection.

This analytical policy brief seeks to analyze the content of the newest MoU, with a specific focus on the challenges and opportunities associated with the expansion of Azerbaijan's gas supplies to the EU via the Southern Gas Corridor as well as the prospects of producing and exporting low carbon electricity and green hydrogen to markets in the EU space.

## *EU Energy Crisis*

Since mid-2021, the world has been going through an energy crisis. As the global economy has been recovering from the COVID-19 pandemic, demand for energy imports has been on the rise. However, delayed maintenance of oil and gas fields coupled with

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underinvestment during the pandemic period resulted in the onset of supply shortages, which in turn sent global energy prices soaring. Energy bills rose particularly across Europe as, in addition to the underinvestment problem, countries in the Old Continent experienced declining domestic production of fossil fuels, limited availability of liquified natural gas (LNG) supplies owing to the strong pull from premium markets in Asia, lower-than-expected electricity generation from renewables, and a natural gas storage shortfall.

All this took place *before* the beginning of the Ukraine war in February 2022, which deepened the European energy crisis. As fighting intensified, threatening to reduce supplies of heating and power-generation fuel from Russia, natural gas futures at the Dutch TTF trading hub—the benchmark in northwest Europe—hit an all-time intraday high of €345 on 7 March 2022. That is equivalent, in terms of British thermal units of energy, to oil prices of $600 per barrel. After dropping for a while, natural gas prices in Europe have resumed an upward trajectory as a heatwave fueled gas demand, coupled with the impact of EU-driven fuel conservation policies designed to get through the forthcoming winter with little to no supply from Russia. In July 2022, the continent's natural gas prices were more than 10 times higher than the average between 2010 and 2020.

The new geopolitical and energy market realities prompted the EU to develop a new energy strategy, which became known as the REPowerEU plan. Initially presented as an outline on 8 March 2022, the full version was published by the EU Commission on 18 May 2022. At its core, the REPowerEU plan seeks to make the European Union independent from Russian fossil fuels well before 2030 and fast-forward the green energy transition. The realization of the plan will be a daunting task, given the bloc's high dependence on Russian energy supplies and the relative lack of sufficient alternatives. In 2021, the EU imported more than 40 percent of its total gas consumption, 27 percent of oil, and 46 percent of coal from Russia. Energy represented 62 percent of EU total imports from Russia, costing €99 billion.

## *Azerbaijan, Energy Security, and Diversity of Supply*

With its vast oil and gas deposits, Azerbaijan has a great potential to boost the EU's energy security and diversity of supplies. The country has already been providing European markets with energy since the 1990s. After signing the $7.4 billion Agreement on the Joint Development and Production Sharing for the Azeri and Chirag Fields and the Gunashli Field (ACG) in the Azerbaijani Sector of the Caspian on 20 September 1994 ("the Contract of the Century"), Azerbaijan gradually became an important exporter of crude to European markets via the Baku-Novorossiysk, Baku-Supsa, and later the Baku-Tbilisi-Ceyhan pipelines. Today, the country supplies around 4.3 percent of the EU's oil imports. Four out of the top five importers of Azeri crude are EU member states, with Italy being the largest buyer (12.5 million tons of oil worth $6 billion), followed by

Croatia (1.5 million tons of oil worth $751.2 million), Germany (1.1 million tons of oil worth $628.1 million), and Portugal (1.1 million tons of oil worth $587 million).

With the discovery of the Shah Deniz natural gas field in 1999, Azerbaijan has gradually transformed itself into an important gas supplier to the EU, too. The launch of the first phase of the Shah Deniz field in 2006 allowed the country to cover its domestic demand and export natural gas to Georgia and Türkiye. The second stage of the Shah Deniz field, which was launched in 2013, added a further 16 bcm of natural gas production capacity per year to the 11 bcm production capacity resulting from the first stage of the project. These became the source base for natural gas supplies to the European Union via a chain of pipelines collectively known as the Southern Gas Corridor (SGC).

SGC is an initiative of the EU Commission for a natural gas supply route from the wider Caspian region to Europe. It was proposed in 2008 to diversify the EU's energy supplies. Currently, the second stage of the Shah Deniz field in Azerbaijan is the sole supply source for the project. The corridor's route from Azerbaijan to EU markets consists of three pipeline projects: the South Caucasus Pipeline (SCP) and its expansion (SCPX) that moves natural gas from the Shah Deniz field to the Georgia-Türkiye border, the Trans-Anatolian Natural Gas Pipeline (TANAP) running across Türkiye, and the Trans Adriatic Pipeline (TAP) that starts at the Türkiye-Greece border, transverses Greece, Albania, and the Adriatic Sea, and then comes ashore in southern Italy to connect to the Italian natural gas network.

With the completion of TAP—the corridor's final leg—Azerbaijan began direct commercial gas supplies to the EU on 31 December 2020. Crossing six countries and stretching across 3,500 kilometers, the $40 billion SGC has become one of the most complex gas value chains ever developed. Via TAP, the corridor can currently supply 10 bcm to EU markets annually, providing 8 bcm to Italy, and 1 bcm each to Greece and Bulgaria. To underpin the investment, long-term ship-or-pay contracts for 25 years were concluded. On top of this, approximately 5 percent of the resulting capacity is available for short-term bookings through auctions in line with EU regulations.

While the initially planned volume of 10 bcm into the European Union might not look considerable (this figure represents around 3.5 percent of the EU's gas imports for 2021), the strategic importance of SGC is hard to overestimate, due both to the new supply source and the route it provides—especially amid the EU's ongoing energy crisis. Current record high energy prices and tightened gas supplies indicate that the relevance of the corridor for enhancing the security of supplies of gas to the EU has only increased. Moreover, the project's capacity can be significantly expanded, thus potentially delivering larger volumes of gas supplies to EU markets (and, potentially, to non-EU markets in the Western Balkans) from Azerbaijan and the wider Caspian region. As noted in September 2020 by Joseph Murphy, a former head of bp in Türkiye, "the 10 bcm/year into [the EU] is not a game-changer from a volume point of view, but it is a game-changer from a new source of product into mainland Europe perspective, and it can be expanded." For

Italy, the corridor provides yet another important supply route. For smaller states like Bulgaria, where annual consumption stands at around 3 bcm, SGC is indeed a game-changer—with every additional bcm of gas supplies making a big difference.

## *The July 2022 MoU: SGC Expansion*

In Baku on 18 July 2022, EU Commission President Ursula von der Leyen and Azerbaijan's President Ilham Aliyev signed a new Memorandum of Understanding (MoU) on A Strategic Partnership in the Field of Energy. This is not the first MoU on energy between Brussels and Baku. On 7 November 2006, the two signed a Memorandum of Understanding Aimed at Strategic Partnership in the Field of Energy, which later paved the way for other initiatives, including the 2011 Joint Declaration on the Establishment of the Southern Gas Corridor. A key message of the newest MoU, which comes as Brussels seeks to wean itself off Russian energy imports and further diversify supplies, is the intention to double the capacity of SGC to deliver at least 20 bcm to the EU annually by 2027. The corridor is already an important supply route for EU markets, having provided 8.1 bcm of natural gas supplies in 2021. The doubling of the corridor's capacity will further contribute to the energy security and diversification objectives of Brussels, as set in the REPowerEU Plan. In fact, Azerbaijan is already increasing natural gas supplies to the EU, with around 12 bcm expected to be delivered in 2022.

All three pipelines within the SGC project—SCPX, TANAP, and TAP—were designed to be expandable, thus allowing for an increase in natural gas supplies from Azerbaijan and the wider Caspian region to EU markets in the future. TAP, which is SGC's European leg, can double its capacity and expand in stages—up to 20 bcm within 45 to 65 months—as a result of requests to be received during the binding phase of a market test and the accumulated requests resulting in an economically viable outcome. The next binding phase for submitting bids to book additional TAP transport capacity was initially scheduled for July 2023. However, following feedback received during public consultations and recent gas market developments, TAP decided to accelerate the aforementioned timeline: it recently announced that a first binding phase will be held in November 2022 and, eventually, a second binding phase could take place in 2023 in order to complete the allocation of all the offer levels. Given the optimism around longer-term demand prospects for natural gas by states in Europe, as well as the EU's urgency to diversify supplies, TAP's market test will likely achieve a positive outcome—perhaps in some cases even exceeding the maximum of 10 bcm/year of extra capacity on offer, as was the case in a first non-binding test in summer 2019, when demand for natural gas was relatively high on the Old Continent.

The additional volumes to be brought by SGC would be especially crucial for the markets of East and Southeast Europe, which have long been called the Achilles Heel of Europe's gas infrastructure. Lack of supply diversity, limited interconnection,

underdeveloped price discovery mechanisms, and political issues have all contributed to the region's dependence on Russian supplies as well as on coal for electricity generation. In the Eastern Balkans, the recent completion of the 3 bcm/year Interconnector Greece-Bulgaria (IGB) paves the way for the delivery of Azerbaijan's gas northward to Bulgaria—and, potentially, further on to other markets in that part of the EU, including Romania, Hungary, and Austria (via the BRUA Interconnector, also known as the Vertical Corridor). The proposed Ionian Adriatic Pipeline (IAP) could connect TAP in Albania with Montenegro, Bosnia and Herzegovina, and Croatia. Other energy markets in the region, such as North Macedonia, Serbia, and Slovenia, could also benefit from an expanded version of SGC via other pipelines and interconnectors. Many of the above-mentioned countries have already approached Azerbaijan to buy additional gas in the future.

Currently, Azerbaijan's Shah Deniz field is the only provider of natural gas for SGC. With estimated natural gas reserves of 2.6 trillion cubic meters, the country has sufficient resources to double natural gas exports to European markets. Besides the Shah Deniz field itself, where production can be further expanded from the current 27 bcm to 31 bcm per year, additional capacity could be added from Absheron, Babak, Umid, and Shafag-Asiman projects. However, an increase in natural gas production in Azerbaijan and the expansion of SGC would require significant investment, which in turn should be guaranteed with a long-term commitment from buyers. No new fields will be developed until potential customers are determined and agreements are signed. The ball is now in the EU's court.

The MoU's recognition of the importance of long-term contracts between EU member states and Azerbaijan is another important aspect worth underlining, as it clearly indicates the changing attitude of Brussels towards new capital investments in natural gas. Earlier, many EU-based policymakers had rejected the idea of financing new hydrocarbon-centric projects and concluding new long-term contracts. With no end in sight for the natural gas rally, the EU is adopting itself to a new reality in which long-term natural gas contracts will continue to play a crucial role in the continent's energy security. Thus, on 6 July 2022, EU lawmakers voted in favor of an EU Commission proposal to include natural gas on the list of environmentally sustainable economic activities covered by what is called the EU Taxonomy, thus removing the last major barrier to potentially billions of euros of funding from investors.

The Southern Gas Corridor route can bring significantly more gas to European markets than the maximum designed capacity of 31 bcm for TANAP and 20 bcm for TAP. While doubling SGC's initial capacity can be promptly and easily performed by adding compressor stations, pumping gas beyond the corridor's maximum designed capacity would require the construction of a new, parallel pipeline. And this is where Turkmenistan— located just across the Caspian, it is the world's fourth-largest holder of proven gas deposits, with estimated reserves of 20 trillion cubic meters—could fit in.

Azerbaijan has enough resources to double gas exports to European markets through the SGC, but going beyond that would be a challenging task, given the country's growing domestic consumption and petrochemical ambitions.

Turkmenistan, by contrast, has significant spare and proven capacity to triple or even quadruple gas supplies via the SGC route. The country has long aspired to send natural gas westward but has been unable to do so due to a number of commercial and geopolitical factors. Yet, the ongoing energy crisis and recent regional developments suggest a change may come at last: a new impetus to the issue of delivering the Turkmen natural gas in a westerly direction is in the air.

Last month, for example, the Vice President of Türkiye, Fuat Oktay, announced that Ankara is currently considering bringing Turkmen natural gas to the country either by "swap agreement," "ship," or "pipeline" whilst providing no further details. The "swap" variant would likely be the expansion of the current trilateral swap agreement, signed in November 2021, under which Iran receives up to 2 bcm of natural gas per year from Turkmenistan and delivers an equivalent amount to Azerbaijan at the Astara border. The "ship" option would likely involve the transit of compressed natural gas (CNG) across the Caspian by tanker or freighter. Finally, the "pipeline" option is believed to be an interconnector project developed by the U.S.-based Trans Caspian Resources (TCR) for a 10-12 bcm per-year pipeline connecting two offshore gas fields in the Caspian Sea: Azerbaijan's Azeri Chirag Gunsehli and Turkmenistan's Banka Livanova. The joint Turkmen-Azerbaijani Dostluk (Friendship) hydrocarbon field in the Caspian Sea could also be connected to Azerbaijan's offshore infrastructure via the same interconnector project.

Time will show if any of the above-mentioned options, or a combination thereof, come to fruition. There are also various options involving Iranian gas supplies, but sanctions, political tensions, and operational challenges will likely prevent any exports to markets in the EU in the medium term.

## *The July 2022 MoU: Green Energy*

The other important area of strategic cooperation underlined in the new MoU is the intention to intensify Baku-Brussels cooperation in the development of renewable energy and green hydrogen production. Given the country's rich potential of about 27,000 MW of onshore renewable capacity, Azerbaijan has great prospects to become a starting point on the green energy corridor to European markets by exporting green electricity and, potentially, green hydrogen. Brussels can facilitate the process by investing and sharing expertise and know-how, but also by offering attractive financing options. The resulting additional renewables capacity in Azerbaijan would allow it to export low carbon electricity and also save more gas for exports to markets in the EU.

Recognizing the benefits of green energy production, Azerbaijan has recently accelerated its efforts to develop renewables. In July 2021, President Aliyev signed a new renewable energy law ("On the Use of Renewable Energy Sources in the Production of Electricity") and the government is currently working on a renewable energy strategy for 2022-2026. Two groundbreaking ceremonies on the development of solar and wind power facilities totaling 470 MW with prominent energy companies (i.e., ACWA Power and Masdar) took place in early 2022. Moreover, several months ago, the government announced its intention to increase the share of renewables in the country's electricity balance to 40 percent in 2030 (from 1990), versus 30 percent planned earlier. Furthermore, in the coming years, Azerbaijan plans to commission new wind, solar, and hydroelectric power plants with total capacity of 1,000 MW, and additionally implement new projects with total capacity of 4,000 MW. Many of these will be developed in the liberated regions of Karabakh and Eastern Zangezur, where the government is creating a green energy zone with zero emissions. Once the Zangezur corridor becomes operational, in accordance with the terms of the tripartite statement that ended the Second Karabakh War, it seems likely that it will become an important transport route—not only for the shipment of goods, but also for electricity to Türkiye and adjacent parts of the European continent. The realization of the Azerbaijan-Georgia-Romania Black Sea submarine cable project, which envisages the construction of an underwater cable for the transportation of electricity underneath the Black Sea, is also under consideration at present.

However, the real, truly strategic game-changer might turn out to be Azerbaijan's enormous offshore wind potential, currently estimated by the World Bank in a flagship June 2022 report at 157,000 MW—over 20 times the country's current installed energy capacity. In fact, it appears that the Caspian Sea ranks second in the world for its offshore wind energy potential.

Besides providing significant amount of electricity for domestic or export purposes, Azerbaijan's offshore wind potential could also be utilized to produce green hydrogen. Like electricity, hydrogen is an energy carrier that can be made from almost all energy resources. Green hydrogen, produced with renewables by electrolysis, is crucial for a successful global energy transition and the achievement of international climate commitments—and Baku could provide a lot of it. On 3 June 2022, the Ministry of Energy of Azerbaijan, the World Bank, and the International Finance Corporation (IFC) published a new roadmap indicating the possibility to install 7,000 MW of offshore wind power by 2040. On 4 June 2022, Azerbaijan's Energy Ministry and Masdar (a company based in the UAE, mentioned above) signed an implementation agreement on the evaluation, development, and implementation of offshore 2,000 MW integrated wind and energy hydrogen, paving the way for Baku to produce and potentially export green hydrogen.

The SGC stakeholders are currently in the process of assessing the degree to which the corridor's three pipelines could technically accommodate delivering a blend of natural gas and hydrogen. Preliminary studies indicate that SGC has indeed the potential for

transporting hydrogen. According to SOCAR, around 20 percent of TANAP's capacity could be used to transport hydrogen through its pipeline network without the need for further investments. Similarly, an Initial Hydrogen Readiness study confirmed in 2021 that TAP has the potential to transport hydrogen blends in the future.

While moving hydrogen via SGC to EU markets is technically feasible, its cost of production, however, might constrain exports. The cost of green hydrogen is heavily dependent on the cost of the electricity used to make it. Producing green hydrogen from offshore wind power in Azerbaijan may be less competitive than doing it in other locations with stronger offshore winds, like in the North Sea area where winds average over 10 meters per second versus 8-9 meters per second in the Caspian Sea, or with cheaper large-scale onshore facilities like in North Africa, Kazakhstan, and Uzbekistan, where green electricity generation is likely to be as low as $25/MWh. However, the cost of producing green hydrogen from offshore wind in Azerbaijan can be decreased through a long-term energy strategy and by scaling upwards, as well as via lower cost concessional financing and government policies to boost confidence for investors.

Finally, the MoU touches upon the issues of energy efficiency and methane emissions. Energy efficiency is regarded in the document as a key linchpin of policy efforts to strengthen security of supply, reduce the environmental impact of the energy sector, and ensure a transition to a net-zero economy. Methane emissions are recognized as a potent global warming contributor. In this context, the text of the MoU indicates that the two sides concurred on the importance of cooperating in work to achieve Azerbaijan's accession to the Global Methane Pledge, a methane emissions reduction initiative launched at COP26 in November 2021. Led by the United States and the European Union, the Pledge now has over 110 country participants, representing around 50 percent of global anthropogenic methane emissions. By joining the Pledge, countries commit to work together to reduce global methane emissions by 30 percent by 2030, compared to 2020 levels.

## *Genuine Win-Win*

The signing of the July 2022 MoU opens a new chapter in strategic energy cooperation between the EU and Azerbaijan. It is a call for deepening bilateral ties across a wide spectrum of the energy field, ranging from natural gas trade to energy efficiency and environmental protection.

A key message of the new Memorandum, which comes as Brussels seeks to wean itself off Russian energy imports, is the intention to double the capacity of the Southern Gas Corridor to deliver at least 20 bcm to the EU annually within the next five years. Baku has sufficient resources to boost supplies. However, an increase in natural gas production in Azerbaijan and the expansion of SGC would require significant investment, which in turn should be guaranteed with a long-term commitment from European buyers. No new fields will be developed until potential customers are determined and agreements

are signed. Given Brussels's urgency for diversifying supplies and the recent inclusion of natural gas on the list of environmentally sustainable economic activities covered by the EU Taxonomy, new long-term contracts on the delivery of Azerbaijani gas to markets in the EU will likely be concluded soon.

Another important takeaway from the new MoU is the expressed aspiration of the two sides to cooperate in the promotion of green energy. Azerbaijan has a great potential in developing renewables. Harnessing this additional capacity would allow it to export low carbon electricity and also save more gas for exports to the EU.

The real game-changer, however, might be Azerbaijan's enormous offshore wind potential, which is currently estimated to represent more than 20 times the country's current installed energy capacity. Besides providing significant amount of electricity for domestic or export purposes, Azerbaijan's offshore wind potential could also be utilized for producing green hydrogen, and possibly blending it with natural gas for export via the SGC.

For Baku—already an important player in European energy security—the realization of the newest MoU's terms promises significant economic and political dividends. It also represents a great opportunity to further promote its regional and global profile. For Brussels—currently in the midst of an energy crisis and seeking to phase out gas imports from Russia—additional volumes of Azerbaijani gas, as well as potential supplies of electricity and green hydrogen, could play a major role in boosting the EU's energy security, supply diversification, and decarbonization objectives.

Unreservedly, realizing in full the intention of the MoU would constitute a genuine win-win, as it were.