Current State of Azerbaijan's Gas & Oil Cooperation with Europe: Opportunities and Challenges

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Abstract

This article provides a comprehensive analysis of Azerbaijan's energy cooperation with Europe. It covers the supply of fossil fuels (oil and gas) and green energy, examining both retrospective and prospective dimensions. The analysis includes production levels, transport infrastructure, potential opportunities in this sector, and challenges, calling for further investigation. The article also assesses possible development scenarios and prospects for gas, oil, and renewable energy sources in Azerbaijan's energy sector.

The first part covers the current status and prospects of Azerbaijan's gas production, consumption, transportation, and export. The second and third parts analyze and evaluate the status of the oil and renewable energy sectors, respectively.

Keywords: Azerbaijan, EU, fossil fuels, gas, oil, green energy, renewable energy, ACG, Shahdeniz, UBOC, JOCAP, bp, SOCAR, TotalEnergies, TAP, TANAP, SGC

Content

I. Introduction

Azerbaijan is a country rich in oil and gas (1) but with poor human rights (2) and sky-high levels of corruption (3).

1) In 2023, compared to 2010, Azerbaijan's natural gas production increased by 19.7 billion cubic meters, reaching 48.3 billion cubic meters, and crude oil extraction decreased by over 20.6 million tons, from 50.8 to 32.2 million tons. According to the Minister of Economy, commodity gas production in Azerbaijan is expected to reach its peak in 2025.

   Azerbaijan's energy resources are primarily destined via Georgia and Turkey to European markets. According to Eurostat[1], Azerbaijan exported energy resources worth over 18.8 billion euros to the European Union (EU) markets in 2023. Two-thirds (65%) of this amount, 12.6 billion dollars, was derived from selling crude oil and oil products in European markets. A third (35%) of Azerbaijan's income from the EU is composed of natural gas. In the previous year, Azerbaijan's revenues from gas supplies to the EU amounted to 6.2 billion euros, 2.5 times less than in 2022.

   In 2021, Azerbaijan exported $27.116 million tons of crude oil and oil products worth 13.218 billion dollars[2].

   In 2022, Azerbaijan exported 26.024 million tons of crude oil and products worth 19.483 billion dollars[3].

   In 2023, Azerbaijan became Europe's tenth most significant trading partner for crude oil imports, selling 20,3 million tons of crude oil and earning 13.4 billion dollars from this trade, primarily supported by trade with Italy[4].
2) As the human rights situation in Azerbaijan has been deteriorating, the country has faced growing scrutiny from the international community regarding its human rights record, democratic practices, and treatment of political dissidents[5].
3) According to Transparency International[6], in 2024, Azerbaijan scored 23 out of 100 and was the 154th most corrupt country among 180 countries worldwide. Autocracy & weak justice systems enable widespread corruption in Azerbaijan.

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[1] Eurostat, Energy statistics - an overview, available at:
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview
[2] State Customs Committee of Azerbaijan, 2021, available at:
https://customs.gov.az/uploads/foreign/2021/2021_12.pdf?v=1643353987
[3] State Customs Committee of Azerbaijan, 2022, available at:
https://customs.gov.az/uploads/foreign/2022/2022_12.pdf?v=1674644815
[4] State Customs Committee of Azerbaijan, 2023, available at:
https://customs.gov.az/uploads/foreign/2023/2023_12.pdf?v=1705581222
[5] Freedom House (2023). Freedom in the World 2024, available at:
https://freedomhouse.org/sites/default/files/2024-02/FIW_2024_DigitalBooklet.pdf
[6] Transparency International, 2024, available at: https://www.transparency.org/en/countries/azerbaijan

II. Potential of oil production in Azerbaijan

Currently, Azerbaijan supplies 5% of the EU market's demand for oil and gas separately[7]. In addition to Italy, Azerbaijan's main trading partners in the European market are Germany, Spain, France, Greece, Croatia, the Czech Republic, Austria, and Portugal.

The indicators of oil industry[8] is presented in Table 1.

Table 1. Azerbaijan oil industry

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Oil: Production in thousands of barrels per day	878	851	841	828	782	784	763	703	708	669	620
Oil: Production in million tonnes	43.5	42.1	41.7	41.1	38.7	38.8	37.6	34.6	34.6	32.7	30.2
Oil: Consumption in thousands of barrels per day	101	100	100	99	100	114	115	105	120	126	130
Oil: Refining capacity, Thousand barrels daily	325	325	325	325	205	163	120	120	135	150	150

Source: Energy İnstitute, SOCAR

[7] Eurostat, Energy statistics - an overview, available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

[8] Energy Institute, 2023, 72nd edition, available at: https://www.energyinst.org/__data/assets/pdf_file/0004/1055542/EI_Stat_Review_PDF_single_3.pdf

In 2023, Azerbaijan exported 26,047,289.51 tons of oil, worth $16,240,829,000, to 22 countries. The list of countries where the exported crude oil was finalized at customs last year is presented in Table 2.

Table 2. Countries to which Azerbaijan exported crude oil[9]

No	Country	Statistical Value (Million USD)	Quantity (tons)	Price per ton (USD)
1	Italy	7,077.11	11,117,529.86	6,365
2	Israel	1,394.27	2,270,342.65	6,141
3	India	1,227.04	2,025,082.15	6,059
4	Germany	871.93	1,341,018.14	6,502
5	Spain	769.59	1,221,974.82	6,298
6	Czech Republic	682.89	1,135,964.61	6,011
7	Turkey	676.31	1,202,207.86	5,625
8	Croatia	590.40	975,165.93	6,054
9	Greece	455.31	743,513.50	6,123
10	United Kingdom	432.28	691,038.87	6,255
11	Romania	382.76	621,947.79	6,154
12	Ireland	366.64	630,056.20	5,819
13	Vietnam	345.49	554,367.23	6,346
14	Portugal	299.58	449,879.31	5,993
15	Austria	152.16	266,568.71	5,708
16	Indonesia	150.21	221,084.92	6,794
17	France	118.64	199,006.72	5,961
18	Singapore	87.79	138,338.45	6,345
19	Tunisia	71.94	106,274.64	6,769
20	Malaysia	34.01	48,042.55	7,079
21	Australia	28.39	39,196.58	7,243
22	Thailand	26.10	48,688.02	5,360
–	Total	16,240.83	26,047,289.51	6,235

[9] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

Source: State Customs Committee of the Republic of Azerbaijan

As seen in the table, last year, Azerbaijan exported 34% of its total crude oil exports to Italy, amounting to 7,077,115.41 thousand USD worth of 11,117,529.86 tons of oil. Thus, Italy ranked first in Azerbaijan's total oil exports and overall trade turnover. Israel ranked second in crude oil exports by volume and value, with exports worth 1,394,267.62 thousand USD of 2,270,342.62 tons of oil. India holds the third position in Azerbaijan's oil export list. Last year, 1,227,040.85 thousand USD worth of 2,025,082.15 tons of oil was exported to this country. Germany and Spain were Azerbaijan's fourth and fifth partners in this trade.

Regarding prices, Thailand leads the list of countries that purchase cheap oil from Azerbaijan, with 1 ton costing 536 USD. The subsequent countries are Turkey (5,625 USD per ton), Austria (5,708 USD per ton), Ireland (5,819 USD per ton), Portugal (5,993 USD per ton), Czech Republic (6,011 USD per ton), Croatia (6,054 USD per ton), India (6,059 USD per ton), and Greece (6,123 USD per ton). Israel completes the top ten with a price of 6,141 USD per ton.

Thus, the peak of Azerbaijan's oil revenues was recorded in 2011 when the State Oil Fund of the Republic of Azerbaijan (SOFAZ) received 198 billion USD from the sale of profit oil and gas. In 2022, SOFAZ's revenues from profit oil and gas sales amounted to 115 billion USD. In 2023, revenues from the sale of profit oil and gas to SOFAZ amounted to 85 billion USD[10]. As for the current year, budgeted revenues from this source for 2024 are projected to be 48 billion USD[11].

According to the income and expenditure data of SOFAZ for January-June 2024, SOFAZ's revenues related to the implementation of oil and gas agreements during the reporting period amounted to 3.78 billion USD, including 3.32 billion USD from the sale of profit oil and gas, 45.64 million USD from bonus payments, 0.176 million USD from transit revenues, and 2.11 million USD from acreage fees[12].

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[10] https://sai.gov.az/files/2.1.%20Yeni%20T.%20Auditor%20Hesabat%C4%B1%20NF%202024._last-985435967.pdf

[11] https://sai.gov.az/files/DNF_rey_2024-327854839.pdf

[12] https://oilfund.az/fund/press-room/news-archive/1649

According to SOFAZ's latest statement for January-July this year[13], Azerbaijan has earned 3,607.7 million USD from the ACG field (Azeri-Chirag-Guneshli) and 364.465 million USD from the Shah Deniz field (gas and condensate) under the production sharing agreement. For comparison, during the same period last year, profit from the ACG field was 4,158 million USD, and profit from the Shah Deniz field (gas and condensate) was 1.141 million USD[14].

As can be seen, Azerbaijan's oil and gas revenues are rapidly declining. The main factor leading to the decrease in oil revenues in Azerbaijan is the decline in production, while the decrease in gas revenues is due to falling prices.

Although the 30-year production sharing agreement signed in 1994 for the "Azeri-Chirag-Guneshli" (ACG) field expired this year, the project's duration was extended until 2050 on September 14, 2017. Thanks to the ACG field, oil production in Azerbaijan increased 5.6 times from 9 million tons, the lowest level in history in 1997, to 50.8 million tons in 2010.

Throughout 2023, the country produced 30.2 million tons of oil (including condensate). Of this oil production, 17.8 million tons were from the "Azeri-Chirag-Guneshli" field, 4.3 million tons (condensate) from "Shah Deniz," and 0.3 million tons (condensate) from the "Absheron" field. The oil production (including condensate) by SOCAR amounted to 7.8 million tons. During this period, 25.2 million tons of oil (including condensate) were transported for export, of which 22.1 million tons belonged to the consortium and 3.1 million tons to SOCAR[15].

Compared to 2010, commodity oil production in Azerbaijan decreased by over 20.6 million tons, or more than 1.5 times, to 32.2 million tons, directly linked to the reduction in oil production in projects implemented with foreign companies. While the country's oil production was 44.6 million tons in 2013, this figure dropped to 32.2 million tons in

[13] https://oilfund.az/fund/press-room/news-archive/1654

[14] https://oilfund.az/fund/press-room/news-archive/1598

[15] Ibadoghlu, Gubad and Bayramli, Emin, Could the economy of Azerbaijan fall into the middle-income trap? (June 19, 2024). Available at
SSRN: https://ssrn.com/abstract=4870534 or http://dx.doi.org/10.2139/ssrn.4870534

2023, marking the lowest recorded figure in the reporting period. The peak oil production during the reporting period was 50.8 million tons, recorded in 2010.

According to estimates, oil production in projects implemented with foreign companies decreased by 11.5 million tons, or 32.1%, over the past ten years. Specifically, oil production in these activities decreased from 35.9 million tons in 2013 to 24.4 million tons in 2023.

During the 20-year reporting period for the ACG field, the highest production was 30.0 million barrels in 2010. There were also sharp declines in ACG's oil production, with reductions of 3.8 million barrels in 2011, 1.6 million barrels in 2017, 2.0 million barrels in 2020, and 1.9 million barrels in 2023 compared to the previous year. The oil production indicator for ACG in 2023 represented 44.5% of the peak production in 2010, with a decline of 10.0 million barrels and 43% compared to 2014. The sharp decline in production from the ACG field has been observed since 2018, and it is expected to continue until 2025. Production is anticipated to stabilize at an annual level of 11.9 million tons between 2025 and 2027[16].

Currently, the "Azeri Central East" (ACE) platform is being constructed to stabilize production at ACG. The ACE project, worth approximately 7 billion USD, is the next phase of the development of the giant ACG field in the Caspian Sea. The project includes a new offshore platform and other facilities with a production capacity of up to 100,000 barrels per day. It is projected that a total of up to 30.0 million barrels of oil will be produced during the project's operation.

The drilling of the first production well at the ACE platform began on December 4, 2023, and the first oil from this well was extracted in March 2024. BP Vice President B. Aslanbeyli stated that "the ACE project will have a positive impact on slowing the decline in oil production rates from ACG." [17]

For information, oil production from the ACG block in 2023 decreased by 12.5% compared to 2022, amounting to approximately 13.3 million barrels (1.8 million tons).

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[16] https://minenergy.gov.az/az/xeberler-arxivi/00146_7892

[17] https://interfax.az/view/910007/az

Additionally, the decline in oil production across the country is also affected by the decline in SOCAR's production. The company's production decreased by 0.9 million tons, or 10.3%, from 8.7 million tons to 7.8 million tons between 2008 and 2023[18].

As can be seen, Azerbaijan is trying to stabilize oil production and reduce its sharp decline by creating new production areas in this field through new investments. The ACE platform leads this list. However, forecasts suggest that the oil era in Azerbaijan will soon end. While the country's daily production exceeded 1 million barrels in 2009 and 2010, it is now below 500,000 barrels. On the other hand, after the commitment at COP28 to gradually reduce fossil fuel consumption, it has become difficult to increase production in the traditional energy sector and attract new investors and creditors[19]. Even the report presented to the Fifth Republic government by the French Senate demands "the suspension of new projects and new phases of ongoing projects involving French companies in Azerbaijan's hydrocarbon sector."[20]

Azerbaijan is making strategic moves to diversify its oil exports by country. This year, Uzbekistan, Poland, Serbia, and the Netherlands have joined the list of countries purchasing oil and oil products from Azerbaijan. Simultaneously, Azerbaijan has ceased selling to the Southeast Asian market, including Singapore, Vietnam, Malaysia, and distant Australia, and the European market, including Austria and Ireland.

[18] https://socar.az/az/page/hasilat-hesabat

[19] Ibadoghlu, Gubad and Bayramova, Zhala, Challenges and Opportunities Created by COP29 for Azerbaijan (June 25, 2024). Available at SSRN: https://ssrn.com/abstract=4876642 or http://dx.doi.org/10.2139/ssrn.4876642

[20] https://caspianbarrel.org/en/2024/06/the-french-senate-is-against-the-activities-of-total-energies-in-azerbaijan/

III. **Potential of gas production in Azerbaijan**

Azerbaijan's proven gas reserves stand at 2.6 trillion cubic meters, with estimated reserves around 3 trillion cubic meters.[21] This ensures Azerbaijan's role as a reliable supplier of hydrocarbon resources for the next 100 years.

Currently, the main gas suppliers to Azerbaijan's domestic market are 1) Shah Deniz, 2) Azeri-Chirag-Guneshli (ACG), 3) UBOC (Umid Project), and 4) JOCAP (Absheron Project).

1. The history of Azerbaijan's cooperation with the European Union in the natural gas sector began on June 4, 1996, with an agreement among the following companies for the exploration, development, and production sharing of the Shah Deniz field in the Azerbaijan sector of the Caspian Sea: ARDNŞ Commercial Joint Venture, BP Exploration (Azerbaijan) Limited, Elf Petroleum Azerbaijan B.V., LUKOIL International LTD, Oil Industries Engineering and Construction, Statoil Azerbaijan A.S., and Turkish Petroleum Overseas Company Limited.[22] As of June 2024, the share distribution among stakeholders was as follows: BP (29.99%), LUKOIL (19.99%), TPAO (19%), NICO (10%), and South Gas Corridor[23] (21.02%).[24]

   On June 5, 2024, Hungary's MVM Group signed a purchase agreement with Azerbaijan's state entity "South Gas Corridor" JSC for a 5% stake in the Shah Deniz gas-condensate Production Sharing Agreement.[25]

   BP is currently the operator of the Shah Deniz field. Exploration work at Shah Deniz was completed, and its opening was announced on July 12, 1999. Construction and installation work under the Shah Deniz Stage 1 project began in February 2003, with operations commencing in 2006. The maximum production for Stage 1 is approximately 10 billion cubic meters of gas and 50,000 barrels of condensate per day. The Shah Deniz Stage 2 project was approved in 2013.[26] Thus,

[21] https://president.az/az/pages/view/azerbaijan/contract
[22] https://e-qanun.az/framework/4209
[23] https://www.bp.com/en_az/azerbaijan/home/who-we-are/operationsprojects/shahdeniz.html
[24] https://www.bp.com/en_az/azerbaijan/home/who-we-are/operationsprojects/shahdeniz.html
[25] https://caspianbarrel.org/en/2024/06/mvm-group-acquires-a-stake-in-one-of-the-world-s-largest-offshore-natural-gas-fields/
[26] https://minenergy.gov.az/az/qaz/sahdeniz-yatagi

in addition to the 10 billion cubic meters of gas produced annually from Shah Deniz Stage 1, the Shah Deniz 2 project is expected[27] to produce 16 billion cubic meters of gas annually. According to forecasts, the full-scale development of the field will yield a total production of 26 billion cubic meters of gas and over 100,000 barrels of condensate per day.

Production at Shah Deniz Stage 2 commenced in 2018. From the start of production in 2007 until July 1, 2023, approximately 196 billion cubic meters of gas have been extracted from the Shah Deniz field, with 58 billion cubic meters used in Azerbaijan's domestic market. The Shah Deniz field's proven reserves amount to 1 trillion cubic meters of gas and 240 million tons of condensate, representing about 50% of Azerbaijan's gas potential. As of July 1, 2024, 223 billion cubic meters of gas and 47 million tons of condensate have been produced from the Shah Deniz field.[28]

2. The PSA-type contract for the Azeri-Chirag-Guneshli (ACG) field was signed in 1994 and is set to expire in 2024. However, a new contract for the development of the ACG block until 2050 was signed on September 14, 2017, in Baku. According to the new contract, British BP (project operator) holds a 30.37% share, SOCAR 25%, Hungary's MOL 9.57%, ExxonMobil 6.79%, India's ONGC 2.31%, Japan's Inpex Corp. 9.31%, ITOCHU Oil 3.65%, Norwegian Equinor 7.27%, and Turkey's TPAO 5.73%. On July 19, 2024, the revised and updated Purchase and Sale Agreement for ACG and the Baku-Tbilisi-Ceyhan (BTC) pipeline was signed, with Equinor selling 6.655% of its 7.27% stake in ACG to SOCAR, 0.615% to ONGC, 7.96% of its 8.71% stake in BTC to SOCAR, and 0.75% to ONGC[29]. Investments under the new agreement are estimated at $43 billion through 2050. As of July 1, 2024, 222.9 billion cubic meters of gas have been produced from the ACG block.[30]

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[27] https://www.bp.com/az_az/azerbaijan/home/who-we-are/operationsprojects/shaheniz1/shah-deniz-stage-2.html

[28] https://www.bp.com/content/dam/bp/country-sites/en_az/azerbaijan/home/pdfs/business-updates/1H%202024%20results.pdf

[29] https://www.equinor.com/news/20231222-azerbaijan

[30] https://abc.az/az/news/150869/acg-ve-sahdeniz-yataqlarindan-hasil-edilen-qazin-hecmi-aciqlanib

Gas production from the deep layers of the ACG field is planned to begin by the end of 2024. The deep-water section of ACG is expected to have gas reserves of 300 billion cubic meters. Natural gas production from the deep layers of the ACG block will start in the first quarter of 2025, with an estimated annual production of approximately 0.5 billion cubic meters.[31]

3. On February 27, 2009, a new agreement was signed between the State Oil Company of Azerbaijan and Total for the Absheron field. In 2015, SOCAR and Total established the joint operating company JOCAP (Joined Operating Company Absheron Petroleum). Currently, JOCAP is operated by TotalEnergies and SOCAR, each holding a 50% stake. The Absheron field's reserves are estimated at 350 billion cubic meters of gas and nearly 100 million tons of condensate. The field's development is planned in several stages. The first stage is expected to produce 1.5 billion cubic meters of gas and 750,000 tons of condensate annually. Production began in the second half of 2023, with current production capacity at 4 million cubic meters of gas and 12,000 barrels of condensate per day. Absheron gas is expected to be sold to Azerbaijan's domestic market, with annual production projected to reach at least 4 billion cubic meters in the coming years.[32]

   On August 4, 2023, ADNOC Group became a shareholder in the Absheron gas-condensate field project (Azerbaijan's second-largest gas project) in the Caspian Sea. Currently, SOCAR and France's TotalEnergies each hold a 35% stake, while ADNOC holds 30%. ADNOC's investment in Azerbaijan is its first experience outside the UAE. Additionally, ADNOC is also interested in investing in Turkmen gas projects.

4. The discovery of the Umid field was made on November 24, 2010. The Umid Babek Operating Company (UBOC) is implementing a development project to increase gas production from the Umid field to 12 million cubic meters per day.[33] In 2023, the "Accelerating Production from Umid-1 Platform" project addressed

[31] https://interfax.az/view/910732/az
[32] https://xalqqazeti.az/az/iqtisadiyyat/132423-abseron-yataginda-qaz-hasilatina-baslanildi
[33] https://uboc.az/what-we-do/projects/umid-2-layihesi

infrastructure constraints, increasing the platform's daily production capacity to 8.1 million cubic meters.[34] Preliminary estimates indicate that the Umid field has reserves of 200 billion cubic meters of natural gas and 40 million tons of condensate[35].

The results of these projects are summarized in the following table[36]:

Table 3: Azerbaijan's Total Gas Production, Consumption, and Processing during Independence

Year	Commodity Gas Production (billion cubic meters)	Natural Gas Consumption (billion cubic meters)	Processed Natural Gas (billion cubic meters)
2013	17.5	9.4	3.768
2014	18.4	9.9	3.655
2015	18.8	11.1	3.361
2016	18.3	10.9	2.954
2017	17.8	10.6	2.866
2018	18.8	10.8	2.900
2019	23.9	11.8	3.161
2020	25.9	12.4	3.707
2021	31.8	12.8	3.549
2022	34.1	13.6	3.556
2023	35.6	15.1	3.5

Source: Energy Institute, SOCAR

As shown in the table, commodity gas production has more than doubled from 2013 to 2023. During this period, domestic demand increased by 60.6%, while the volume of

[34] https://apa.az/energy-and-industry/umid-1-platformasinda-hasilatin-gucu-artirilib-803323

[35] https://www.yeniazerbaycan.com/SonXeber_e21140_az.html

[36] https://www.energyinst.org/__data/assets/pdf_file/0004/1055542/EI_Stat_Review_PDF_single_3.pdf

processed natural gas from the Garadakh gas processing plant decreased by over 250 million cubic meters.

Regarding the fields, Shah Deniz remains the leading field, followed by Azeri-Chirag-Guneshli and Absheron. Production data for the first half of 2024 compared to the same period in the previous year is provided in the second table.

Table 4. Gas Production by Fields in Azerbaijan[37]

Field	H1 2023, billion m^3	H1 2024, billion m^3
Shah Deniz	13.2	14
Azeri-Chirag-Gunashli	6.5	6.5
SOCAR	4.4	3.8
Absheron	-	0.8
Total	24.1	25.1

Source: Ministry of Energy of the Republic of Azerbaijan

As seen, the Shah Deniz field is the largest gas supply project to Europe. For this project, commercial gas transportation to Europe via the new Southern Gas Corridor (SGC) began for the first time on December 31, 2020.

Shah Deniz and ACG fields, the pillars of the country's remaining hydrocarbon resources, are currently operating at a steady pace. Their recent production figures indicate a consistent and reliable supply. From January to June 2024, a total of 14 billion cubic meters of gas were extracted from the Alpha and Bravo platforms at the Shah Deniz field. According to BP's report, the daily production capacity of the existing facilities in the Shah Deniz project currently stands at 80.7 million cubic meters, ensuring a stable supply of approximately 29.5 billion cubic meters of natural gas annually. However, it's important to note that costs in the Shah Deniz project are continuously rising alongside production. In the first half of this year, total expenditures for the Shah Deniz project

[37] https://minenergy.gov.az/az/xeberler-arxivi/00306
https://azertag.az/xeber/azeri_chiraq_gunesli_ve_sahdeniz_yataqlarindan_hasil_edilen_neft_ve_qazin_hecmi_achiqlanib-3092030

amounted to 1.658 billion USD, which is 42 million USD higher than the same period last year.[38]

According to the State Oil Fund's statement[39], revenues from gas and condensate exports from the Shah Deniz field from January 1 to August 1, 2024, totaled 364.465 million USD, a decrease of 3.13 times compared to the same period in 2023. The primary reason for the reduction in gas revenues from this field is the price factor[40]. Since the beginning of 2024, prices in the European gas market have begun to stabilize. However, in the wake of recent events, including the Ukrainian Armed Forces' attack on Russia's Kursk region, gas prices in Europe have increased by 5%, reaching 435 USD per 1,000 cubic meters[41].

The ACG stakeholders are working to stabilize production in both fields through additional investments. The first gas will likely be extracted under the Deep Gas project within the Azeri-Chirag-Guneshli (ACG) block by the end of 2024.

The first phase of the Absheron gas field started production in the second half of last year. In 2024, 1.5 billion cubic meters of gas are anticipated to be produced from this field. The second phase of the field's development, which aims to increase annual production to 5 billion cubic meters, requires additional investment.

The evaluation of hydrocarbon reserves discovered in the first exploration well (SAX01) in the Shafag-Asiman offshore block by BP, and the planning of future activities, are still ongoing[42]. It is planned to produce 1.5-1.8 billion cubic meters of gas annually from the Karabakh field in the future.

Considering the ongoing projects and potential for further expansion in gas production, Azerbaijan's gas production is approaching its peak. According to the Minister of Economy, commodity gas production in Azerbaijan is expected to reach its peak in 2025[43].

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[38] https://bizim.media/az/iqtisadiyyat/204902/sloveniyaya-qaz-ixraci-ldquoahdenizrdquoin-artan-hasilati-ndash-lham-abanin-rhnd/

[39] https://oilfund.az/fund/press-room/news-archive/1654

[40] Ibadoghlu, Gubad, Three Key Factors Reducing Oil Revenues in Azerbaijan (August 09, 2024). Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4920430

[41] https://www.eia.gov/dnav/ng/hist/n3035us3m.htm

[42] https://www.bp.com/en_az/azerbaijan/home/news/business-updates/First-half-2024-results.html#accordion_6

[43] https://apa.az/energy-and-industry/azerbaycanda-emteelik-qaz-hasilatinin-pik-hedde-catacagi-vaxt-aciqlanib-793491

According to the forecast by S&P Global Ratings, Azerbaijan's commodity gas production is stabilizing at the level of 35-36 billion cubic meters[44]. "Given that the majority of the production growth has already occurred, we believe Azerbaijan is approaching the peak of gas production that will be sustained for several years," the forecast states.

Government forecasts predict that natural gas production in Azerbaijan will increase to 50 billion cubic meters by 2025. To understand the situation over the past three years, refer to Table 3[45].

Table 5. Gas Production by Fields

Field	2022 (billion cubic meters)	2023 (billion cubic meters)	First Half of 2024 (billion cubic meters)
Shah Deniz	25.2	26.2	14
Azeri-Chirag-Guneshli	13.4	12.9	6.5
SOCAR	8.1	8.4	3.8
Absheron JOCAP	-	0.8	0.8

Source: Ministry of Energy of Republic of Azerbaijan

With Azerbaijan's domestic consumption reaching 15.1 billion cubic meters in 2023 and local demand showing a consistent annual increase. Commodity gas production is anticipated to fall below 35 billion cubic meters, highlighting the pressing nature of the situation.

While the plan is to supply gas from the Absheron and Umid-Babek fields to the domestic market, it's crucial to note that approximately 900 settlements in Azerbaijan are yet to be gasified, representing a significant untapped potential in the market.

According to the State Statistics Committee[46], from January to June 2024, a total of 21.8709 billion cubic meters of commodity natural gas were reported, including the reserves at

[44] https://disclosure.spglobal.com/ratings/en/regulatory/article/-/view/type/HTML/id/3193922

[45] https://sai.gov.az/files/DNF_rey_2024-327854839.pdf

[46] https://www.stat.gov.az/news/index.php?lang=az&id=5954

the beginning of the year. Of this amount, 27.5% was consumed domestically, 59.8% was exported, 2.5% was lost, and 10.2% remained in reserves as of early July.

In 2023, Azerbaijan sold 13.5 billion cubic meters of gas on the domestic market, with SOCAR accounting for only 6.5 billion cubic meters. Azerbaijan purchased 6 billion cubic meters of gas from international operating companies to meet domestic demand and imported small volumes from Turkmenistan and Russia. The largest gas consumer in Azerbaijan is the energy sector, with 93% of produced gas used for natural gas combustion. After processing, only 3.5 billion cubic meters of gas enter the domestic market.

In 2023, Azerbaijan's natural gas production increased by 19.7 billion cubic meters compared to 2010, reaching 48.3 billion cubic meters. In 2022, Azerbaijan increased its gas exports by 18% to 22.3 billion cubic meters.

According to the State Customs Committee's foreign trade statistics, five countries purchased Azerbaijani gas in the last quarter of the previous year. Table 4 presents the geographical distribution of Azerbaijani gas sales up to 2024, the volume by country, statistical value, and purchase price.

Table 6. Azerbaijani Gas Exports in the 4th Quarter of 2023[47]

Country	Volume (m^3)	Statistical Value (thousand USD)	Price per 1000 m^3 (USD)
Italy	3,137,277,379.9	1,359,364.4	433.3
Bulgaria	434,012,531.0	153,721.1	354.2
Greece	234,590,763.0	112,348.6	478.9
Turkey	1,986,366,374.0	586,117.1	295.1
Georgia	410,630,860.0	57,261.8	139.4

Source: State Customs Committee of Azerbaijan

The table reveals that Italy is the largest purchaser of Azerbaijani gas. Last year, Azerbaijan's gas exports extended to Bulgaria and Greece, both EU members, in addition to Italy. However, it's important to note that Azerbaijan also plays a significant role in

[47] https://customs.gov.az/az/faydali/gomruk-statistikasi/statistics-bulletin

providing affordable gas to Georgia and Turkey. The gas supply price to Georgia, at 139.4 USD per 1000 cubic meters, is 3.43 times more affordable than the price for Greece. Similarly, the gas supply price to Turkey is significantly lower than in European markets, highlighting the impact of Azerbaijan's gas exports on these countries.

Before the war in Ukraine, Russia's supply to Europe accounted for about one-third of the gas consumed in EU countries. Following Russia's conflict with Ukraine, Europe sought alternative gas sources to reduce dependence on Russian gas. This conflict led to a significant shift in the European gas market, with countries like Azerbaijan gaining more prominence as gas suppliers. To this end, on July 18, 2022, Azerbaijan and the European Union signed a "Memorandum of Understanding on Strategic Partnership in the Energy Sector" represented by the European Commission[48]. One of the main cooperation directions outlined in the memorandum is to double the volume of natural gas transported from Azerbaijan to Europe, reaching 20 billion cubic meters by 2027. For this purpose, on April 25, 2023, a Memorandum of Understanding on the development of cooperation with gas transmission operators in Bulgaria, Romania, Hungary, and Slovakia was signed[49]. This initiative, known as the "Ring of Solidarity," aims to deliver additional gas to Europe through an improved gas transmission network in Bulgaria, Romania, Hungary, and Slovakia. Thus, after the onset of the Russia-Ukraine war and the significant reduction in Russian gas supplies to Europe, Azerbaijan has become one of the EU's alternative suppliers. Gas exports from Azerbaijan to Europe increased by 39% from 8.1 billion cubic meters in 2021 to 11.4 billion cubic meters in 2022, and further to 11.6 billion cubic meters in 2023. In the first half of 2024, Azerbaijan increased gas exports to Europe by 12% compared to the same period last year. According to TAP's report[50], over 6.53 billion cubic meters of gas were delivered to European consumers in the first half of 2024, including 0.46 billion cubic meters to Bulgaria, 0.60 billion cubic meters to Greece, and over 5.42 billion cubic meters to Italy.

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[48] https://president.az/az/articles/view/56689

[49] https://minenergy.gov.az/az/xeberler-arxivi/bolqaristan-ruminiya-macaristan-ve-slovakiyanin-oturucu-sistem-operatorlari-ve-socar-arasinda-emekdasligin-tesviqine-dair-anlasma-memorandumu-imzalanib

[50] https://report.az/en/energy/schieppati-says-budget-of-tap-expansion-s-first-level-to-exceed-130-million-euros/

According to the Azerbaijani Ministry of Energy[51], gas delivered to Europe accounted for 51% of total exports from January to June 2024. Additionally, 39% of the exported gas, or 5 billion cubic meters, was delivered to Turkey, while 10%, or 1.3 billion cubic meters, was sent to Georgia.

By 2024, the Southern Gas Corridor project will see a significant expansion as Romania, Serbia, and Hungary are set to join through various interconnectors. According to the agreement, Serbia will start receiving up to 400 million cubic meters of gas annually from Azerbaijan in 2024-2026, with the volume increasing to 1 billion cubic meters from 2027.

As for Hungary, the political agreement signifies a significant increase in the gas supply from Azerbaijan. The deal involves the export of 1 billion cubic meters of gas to Hungary, with the first batch of commercial supplies, containing 100 million cubic meters, set to arrive promptly in the last quarter of 2023[52]. This is a substantial increase from Hungary's previous 50 million cubic meters purchase, covering only 1-2 days of the country's winter consumption.

Starting August 1, 2024, Slovenia will become the ninth country to receive Azerbaijani gas, marking another milestone for the Southern Gas Corridor project. While details about the volumes and contract duration for Slovenia are yet to be confirmed, the future looks promising. In 2024, the supply of Shah Deniz gas to Europe is expected to increase significantly, potentially reaching up to 12 billion cubic meters.

Several key projects have been implemented to create the infrastructure for exporting Azerbaijani gas to the EU market. In early 2007, the Baku-Tbilisi-Erzurum gas pipeline (with an annual capacity of 8.2 billion cubic meters) was launched within the framework of the 690-kilometer South Caucasus Pipeline to facilitate the export of Shah Deniz gas to Georgia and Turkey. In 2011, Azerbaijan and the European Commission signed a Joint Declaration on the Southern Gas Corridor (SGC) project. Notably, in September 2014, the foundation for the 'South' Gas Corridor (SGC) project was laid at the Sangachal terminal, a location of paramount importance in the gas export process.

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[51] https://minenergy.gov.az/az/xeberler-arxivi/00306

[52] https://caspiannews.com/news-detail/hungary-secures-gas-purchase-agreement-with-azerbaijan-2023-8-22-3/

IV. Gas transportation opportunities from Azerbaijan

In connection with the transportation of Azerbaijani gas to the global market, one phase of the work on expanding the South Caucasus Pipeline (SCP) (with an annual capacity of 16 billion cubic meters), the TANAP - Trans-Anatolian Pipeline (with an annual capacity of 16 billion cubic meters), and the TAP - Trans-Adriatic Pipeline (with an annual capacity of 10 billion cubic meters) projects has been completed[53]. As seen, althoujabgh TAP is the final and crucial link in the supply of Azerbaijani gas to Europe, its capacity is lower compared to SCP and TANAP. Therefore, the European Commission's plan to phase out fossil fuel consumption in Russia by 2030 (REPowerEU) has also called for expanding TAP's capacity to increase gas supplies to the European Union[54].

Currently, the existing transport infrastructure through TAP allows the supply of gas to Europe to reach a maximum of 12 billion cubic meters. TAP has been operating at full capacity since mid-February 2022, and its capacity has been increased by about 15% within Phase 1. According to TAP's director, the costs for the first phase of the pipeline expansion will exceed 132 million euros[55]. This investment, made through internal resources, is supported by TAP's shareholders. For information, TAP's shares are equally distributed among bp (20%), SOCAR (20%), Snam (20%), Fluxys (20%), and Enagás (20%)[56]. As a result, by December 31, 2025, an additional 1.2 billion cubic meters of capacity is expected to be added to the pipeline.

Shareholders aim to double TAP's annual capacity by 2027. To date, over 37.53 billion cubic meters have been transported through TAP, with 2.29 billion cubic meters delivered to Bulgaria, 3.63 billion cubic meters to Greece, and 31.33 billion cubic meters to Italy[57].

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[53] https://minenergy.gov.az/az/layiheler/cenub-qaz-dehlizi_2196

[54] Ibadoghlu, Gubad, Is the Increase in Gas Exports from Azerbaijan to Europe An Illusion or a Reality? (February 16, 2023). Available at SSRN: https://ssrn.com/abstract=4361366 or http://dx.doi.org/10.2139/ssrn.4361366

[55] https://report.az/energetika/tap-direktoru-qaz-kemerinin-genislendirilmesinin-birinci-merhelesine-cekilen-xercler-130-milyon-avronu-otecek/

[56] https://www.tap-ag.com/infrastructure-operation

[57] https://report.az/en/energy/schieppati-says-budget-of-tap-expansion-s-first-level-to-exceed-130-million-euros/

According to a press release by TAP[58], the pipeline's expansion capacity, offered 'openly, transparently, and without discrimination' through regular market tests, presents a promising future for gas supply. The company's initial capacity can be expanded in steps to reach at least 20 billion cubic meters per year, a significant increase that could positively impact the energy industry. Although TAP reaffirmed its 'firm commitment' to export at least 20 billion cubic meters of gas annually to the EU by 2027, both within the framework of the RePowerEU plan and the EU-Azerbaijan Memorandum of Understanding on a strategic energy partnership signed in July 2022, an alternative to TAP is also being discussed. Ukraine intends not to renew the five-year transit agreement with Russia's Gazprom, which ends in December 2024. In such a case, the EU could lose 14 billion cubic meters of gas received through Ukraine's pipeline. If the transportation of Russian gas through Ukraine is halted, countries in Central and Eastern Europe, including Slovakia, Hungary, and Austria, may face gas shortages.

Therefore, Ukraine's Naftogaz is in talks with the State Oil Company of Azerbaijan (SOCAR) regarding the possible transit of Azerbaijani gas to Europe through Ukraine and its storage in Ukraine. Naftogaz CEO Aleksey Chernyshov said in an interview with a Ukrainian publication, "We do not rule out negotiations with other companies, including SOCAR. However, we do not have final contract decisions. Our mandatory condition for cooperation is SOCAR's ability to ensure the storage of gas in Ukraine's storage facilities." He also believes that the more gas SOCAR agrees to store in Ukraine, the better. For information, Ukraine's gas storage capacity is 31 billion cubic meters. This volume is too large for Ukraine's domestic needs, so more than half of the storage facilities still need to be filled. Naftogaz plans to lease them out for profit.

Naftogaz's CEO Aleksey Chernyshov also stated that Ukraine is considering Azerbaijan's swap offer as the main alternative. This involves importing gas from Russia by Azerbaijan and exporting it to Europe via Ukraine's pipeline. While not in large volumes, it is possible to transfer gas from Azerbaijan to Ukraine through Russia. Existing gas infrastructure between Azerbaijan and Russia allows for the annual transportation of

[58] https://www.tap-ag.com/media-library

approximately 5 billion cubic meters of gas to Ukraine. Ukrainian officials believe that if this deal is successful, Azerbaijan could supply 2 billion cubic meters of gas annually.

Currently, the risks associated with this alternative are being assessed. First, there is the risk of Azerbaijani gas being supplied to Europe through Ukraine, becoming a channel for the covert export of Russian fuel. Experts believe that the plan to send Azerbaijani gas to Europe could simply mask Russian fuel[59].

Second, to deliver Azerbaijan's alternative fuel to Europe, it must pass through Russia and Ukraine. In such a case, if the transport of Russian gas through Ukraine ceases, Ukraine's gas transmission system could become a target for Russia.

Azerbaijani President Ilham Aliyev clarified reports that the European Commission and European financial institutions are not inclined to allocate capital for the expansion of the Southern Gas Corridor during his speech at the 2nd Shusha Global Media Forum on July 20, 2024. He stated[60], "On the one hand, Europe asks us to increase production and supply it to Europe because they have a serious need for it. On the other hand, they are not financing it, and this is a topic in my discussions with my European colleagues. The European Investment Bank has completely stopped financing projects related to fossil fuels. The European Bank for Reconstruction and Development almost does not allocate funds to this sector." This was anticipated. I included this problem in the list of potential difficulties in articles published a year ago[61]. In those articles, I noted that international financial institutions (IFIs) need to allocate funds for projects related to fossil fuels to accelerate the energy transition. This approach has become a leading direction in the strategies of IFIs in recent years. On the other hand, creditors and investors only allocate funds to projects with long-term purchase and sale contracts. The absence of a long-term contract for gas trade between Azerbaijan and the European Union, only a Memorandum of Understanding, i.e., a protocol of intent, is a significant hurdle for IFIs to allocate funds. The urgency of this issue is underscored by the fact that such long-term contracts should

[59] https://www.ft.com/content/d826f419-1ee2-4113-b429-68cbb5e64a25

[60] https://president.az/az/articles/view/66533

[61] G Ibadoghlu, I Bayramov An Assessment of the Potential of EU-Azerbaijan Energy Cooperation and its Impact on EU Gas Dependence on Russia, FOREIGN POLICY REVIEW, 2023

be signed between the buyer and seller and between transit countries. Therefore, this issue is not only caused by the European Union but is also a subject of negotiations between Georgia and Turkey, which have transit country status for supplying Azerbaijani gas to Europe.

Amid Baku's concern over the EU's failure to approve long-term contracts with Azerbaijan, the gas transport route to Europe via Russia and Ukraine also attracts interest from the perspective of pipeline diversification. However, questions about how this scheme will work under dependency on Russia remain the same but rather increase.

While Azerbaijan possesses ample gas resources for European supply, the primary challenge lies in the delivery process. The expansion of the pipeline, supported by TAP shareholders using internal resources, is a step towards doubling the supply of Azerbaijani gas to Europe to 20 billion cubic meters by 2027. However, the lack of external donors or creditors for projects worth billions of euros poses a significant hurdle. Azerbaijan can increase gas supply to Europe via TAP to a maximum of 13-14 billion cubic meters using internal resources. If the supply of gas to Europe via pipelines through Russia and Ukraine proves successful, an additional 2 billion cubic meters of gas can be added to the existing volume by 2027, increasing the volume of gas exported from Azerbaijan to European markets to 15-16 billion cubic meters[62].

[62] Ibadoghlu, Gubad, Energy Dialogue between Azerbaijan and Europe: Realities and Illusions (May 20, 2023). Available at SSRN: https://ssrn.com/abstract=4454213 or http://dx.doi.org/10.2139/ssrn.4454213

V. Challenges of Azerbaijan's Gas Cooperation with Europe

Azerbaijan is approaching the peak of its natural gas production. The 'Shah Deniz' field, a key resource, is expected to reach peak production, leading to a decline in production at the 'Azeri-Chirag-Gunashli' block. However, introducing new production wells at the 'Umid' and 'Absheron' fields is expected to compensate for this decline. As a result, Azerbaijan's natural gas production is projected to stabilize at approximately 50 billion cubic meters by 2025, with commercial gas production at around 36 billion cubic meters. In the coming years, gas production is expected to stabilize at this level. Considering that in 2023 domestic consumption was reported at 15.1 billion cubic meters in external source[63], with 13.4 billion cubic meters according to SOCAR[64], Azerbaijan's natural gas exports amounted to 23.856 billion cubic meters. If commercial gas production stabilizes around 36 billion cubic meters, increasing gas exports from the country will only be possible in two cases: 1) reducing domestic consumption or 2) importing additional gas for local consumption or export.

Let's evaluate the current situation based on these possibilities.

1) First, it should be noted that the incorrect accounting of losses in domestic gas transmission leads to varying reports on the local consumption level and reduces energy data reliability in Azerbaijan. Second, according to recent data, nearly 900 residential settlements in Azerbaijan still have no gas infrastructure. Third, resettlement and business formation in the Karabakh and East Zangezur economic regions, which have been liberated from occupation, have just started, and to supply gas to these regions, gasification should be carried out in up to 20% of the country. These factors will inevitably increase gas demand among the population and business groups. However, the primary factors driving domestic gas demand are industry development, particularly the petrochemical and energy sectors and the launch of new production facilities in these areas.

[63] https://www.energyinst.org/__data/assets/pdf_file/0004/1055542/EI_Stat_Review_PDF_single_3.pdf
[64] https://interfax.az/print/909436/az

Energy sector specialists consume approximately 5 billion cubic meters of gas annually, while the population consumes around 3.8 billion. In 2023, 93% of electricity produced in "Azerenergy" thermal power plants was generated by burning natural gas. As of the first six months of 2024, this figure has decreased to 85.2%. Thus, a shift to alternative sources in the energy sector could reduce the demand for natural gas as a raw material. While gas savings are achieved through changes in this sector, the volumes remain relatively small. Azerbaijan plans to save hundreds of millions of cubic meters of gas in the coming years by prioritizing the use of renewable energy sources[65].

Finally, the increasing domestic demand for gas in Azerbaijan has shown a significant and urgent upward trend over the past 13 years. Domestic gas consumption in Azerbaijan was 8.99 billion cubic meters in 2011, 9.34 billion cubic meters in 2012, 9.43 billion cubic meters in 2013, 10.05 billion cubic meters in 2014, 11.12 billion cubic meters in 2015, 10.85 billion cubic meters in 2016, 10.5 billion cubic meters in 2017, 10.79 billion cubic meters in 2018, 11.79 billion cubic meters in 2019, 12 billion cubic meters in 2020, 12.8 billion cubic meters in 2021, and 13.6 billion cubic meters in 2022[66]. According to the State Statistical Committee[67], in the first half of 2024, 27.5% of Azerbaijan's natural gas reserves were consumed domestically, 59.8% were exported, and 2.5% were lost. Additionally, 10.2% of the gas reserves were stored in underground storage facilities.

2) Regarding imports, Azerbaijan mainly conducts swap operations for gas imports from Russia via the existing Mozdok (Russia)-Gazimammad (Azerbaijan) pipeline gas pipeline, which has a maximum transmission capacity of 10 billion cubic metres[68] and Turkmenistan via Astara (Iran)-Hajigabul (Azerbaijan) pipeline[69]. After importing 1.798 billion cubic meters of gas in 2018, Azerbaijan resumed gas imports in 2022, with 1.554 billion cubic meters of gas purchased that year.

According to customs statistics, in 2023, Azerbaijan's total imports amounted to 2.32 billion cubic meters, with 1.52 billion cubic meters from Turkmenistan and 800 million

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[65]https://azertag.az/xeber/azerbaycan_prezidenti_qarsidaki_illerde_yuz_milyonlarla_kubmetr_tebii_qaza_qenaet_edeceyik-2473778

[66] https://www.energyinst.org/__data/assets/pdf_file/0004/1055542/EI_Stat_Review_PDF_single_3.pdf

[67] https://www.stat.gov.az/news/index.php?lang=az&id=5954

[68] https://blogs.lse.ac.uk/europpblog/2022/08/03/what-the-eus-new-gas-deal-with-azerbaijan-could-mean-for-europes-energy-security/

[69] https://theloop.ecpr.eu/can-azerbaijan-become-a-reliable-gas-supplier-for-europe/

from Russia. In addition, through swap operations, Azerbaijan exported 400 million cubic meters of gas to Russia's Dagestan Republic and Turkmenistan to supply 450 million cubic meters of gas to Nakhchivan through the territory of Iran. Excluding imports, Azerbaijan's natural gas exports are expected to stabilize at 26 billion cubic meters in the coming years, based on domestic resources. According to actual data, 51% of Azerbaijan's exported gas goes to Europe, 39% to Turkey (as a transit country), and 10% to Georgia. In 2023, Azerbaijan sold 9.5 billion cubic meters of gas to Turkey and 2.5 billion cubic meters to Georgia[70]. Based on these figures, Azerbaijan could potentially increase its gas exports to Europe to 13 billion cubic meters, leveraging its domestic potential. Moreover, successful negotiations with Russia and Ukraine could pave the way for an additional 2 billion cubic meters of Azerbaijani gas to reach Europe. This could result in a maximum of 15 billion cubic meters of gas being delivered to the European market under the name of made in Azerbaijan. However, the goal of increasing gas exports from Azerbaijan to 20 billion cubic meters by 2027 may be challenging due to current limitations in commercial gas production and transportation infrastructure.

Thus, solving the existing problems to meet Azerbaijan's commitment to increase exports to 20 billion cubic meters by 2027 will require multibillion of euros in investment and a long-term timeline. Even if the necessary financial resources are found to expand the gas export infrastructure to Europe, Azerbaijan's domestic potential would not allow for the export of more than 13 billion cubic meters of gas to the European market while maintaining the current levels of gas supply to Georgia and Turkey. This would only be possible if Azerbaijan imported gas from Russia or Iran, redirected it to domestic consumption, and sent its gas to Europe. Due to the lack of infrastructure for gas transmission between Turkmenistan and Azerbaijan, Azerbaijan cannot directly import gas from Turkmenistan. Moreover, gas deals under swap operations between Turkmenistan and Azerbaijan via Iran only occur occasionally due to disagreements over pricing. The actual gas transmission potential through existing infrastructure is estimated at around 5 billion cubic meters for Russia and 2.5 billion cubic meters for Iran. This

[70] https://minenergy.gov.az/az/xeberler-arxivi/00146_7892

situation raises serious questions among investors about financing Azerbaijan's gas supply project to Europe. As a result, investors are demanding long-term purchase contracts of 20-25 years with the European Union and its member states before deciding to finance this project. The current conditions do not support the signing of such contracts, underscoring the importance of long-term planning and strategic thinking in the energy industry.

Prior to the agreement to expand the strategic partnership between Gazprom and SOCAR[71] on August 19, 2024, Western circles, including foreign media and international rating agencies, raised concerns about Azerbaijan's ability to meet its commitments to European consumers due to inadequate gas reserves. In May 2024, Fitch Solutions predicted[72] that Azerbaijan would increase natural gas imports from Russia to meet domestic demand. Standard & Poor's Commodity Insights[73] argued that even if Azerbaijan could realize its current and potential gas projects on time, the country's gas balance would remain extremely strained, and only through imports from Turkmenistan, Iran, and Russia could Azerbaijan comfortably meet the increasing demand from Europe. The Economist Intelligence Unit (EIU) noted[74] that Azerbaijan's gas exports to the EU have significantly increased since 2021, but the commitment to double the gas flow to the bloc by 2027 is constrained by infrastructure capabilities and growing domestic consumption. Investment will be required to improve Azerbaijan's gas infrastructure and increase production, as the EU prefers renewable sources and higher volumes of liquefied natural gas (LNG), making it challenging to allocate funds to this sector. Eurasianet reported[75] that although export growth is strong, the overall volume is still well below the level needed to fulfill Azerbaijan's promise to the EU to increase gas exports to 20 billion cubic meters per year by the end of 2027. The author suggests that cooperation with Turkmenistan appears to be a viable solution to Baku's export dilemma.

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[71] https://aze.media/gazprom-and-azerbaijans-socar-ready-to-expand-strategic-partnership/

[72] https://sputnik.az/20240502/yalan-nezeriyye-azerbaycanin-rusiya-federasiyasindan-qaz-idxalina-ehtiyaci-varmi-464320346.html

[73] https://www.spglobal.com/commodityinsights/en/ci/research-analysis/will-azerbaijan-meet-europes-2027-gas-demand-deadline.html

[74] https://www.eiu.com/n/azerbaijans-gas-exports-to-the-eu-face-challenges/

[75] https://eurasianet.org/azerbaijans-gas-exports-increase-but-baku-still-challenged-to-meet-eu-goal

It seems that the agreement to expand the strategic partnership between Gazprom and SOCAR has so far resulted in protests in Ukraine and validation of analysts' expectations. Analysts did not believe that Azerbaijan could meet its commitment to supply 20 billion cubic meters of gas to European buyers by 2027 with domestic resources alone. They suggested that if the infrastructure for gas transit to Europe were increased, Azerbaijan could fulfill its commitment to European consumers by importing gas from Russia, Turkmenistan, and Iran. Due to the lack of gas transit infrastructure between Azerbaijan and Turkmenistan, natural gas from Turkmenistan can only be imported through swap transactions via Iran. This means that Azerbaijan imports natural gas from Iran in the volume exported by Turkmenistan to Iran, and this has been happening since 2022. Gas from Russia and Iran can be supplied to Azerbaijan through existing pipelines (Mozdok (Russia) - Shirvanovka - Hacıqabul and Astara (Iran) - Astara - Hacıqabul[76]). Currently, the actual throughput capacity of the Mozdok (Russia) - Shirvanovka - Hacıqabul pipeline is a maximum of 5 billion cubic meters per year, and the maximum throughput capacity of the Astara (Iran) - Astara - Hacıqabul pipeline is 3 billion cubic meters per year[77]. The agreement to expand the strategic partnership between Gazprom and SOCAR can be considered a step toward realizing one of the analysts' previously suggested scenarios: importing natural gas from Russia.

The agreement to expand the strategic partnership between Gazprom and SOCAR could discourage European buyers from committing to long-term gas purchases from Azerbaijan. This agreement increases the number of arguments reinforcing the position that Azerbaijan cannot meet its commitments to European buyers solely based on its own potential. The main goal of the EU's natural gas deal with Azerbaijan is to reduce European consumers' dependence on Russia and limit the export capabilities of Russian gas suppliers. The EU has significantly reduced its imports from Russia, managing to come out of the last two winter seasons with ample gas reserves. Consequently, Azerbaijan, which seeks to expand its strategic partnership with Russia in the gas sector,

[76] https://minenergy.gov.az/az/qaz/cenubi-qafqaz-boru-kemeri-cqbk

[77] Gubad Ibadoghlu, Can Azerbaijan become a reliable gas supplier for Europe? ECPR's Political Science Blog, https://theloop.ecpr.eu/can-azerbaijan-become-a-reliable-gas-supplier-for-europe/

must make decisions regarding its new gas strategy during a period when European buyers prefer LNG[78], are rapidly transitioning to renewable energy sources, and have reduced their gas demand by 18% from August 2022 to December 2023, saving approximately 101 billion cubic meters[79]. Additionally, European underground gas storage levels have exceeded 91% or 100 billion cubic meters[80], and the trading price of gas on the European exchange has stabilized at around $420 per thousand cubic meters[81]. All these factors work against Azerbaijan's current gas strategy and deter European buyers from committing to long-term gas purchases from Azerbaijan.

Europe's decreasing dependence on Russia, as it approaches several energy security goals, has been consistently declining. According to Eurostat[82], Russia's share of the EU's natural gas imports fell from 41% in the first quarter of 2022 to 14% in the first quarter of 2024. This threefold decrease has significantly impacted Russian gas exports. While natural gas exports from Russia were approximately 450 million cubic meters per day at the end of 2021, this level has now dropped to about 150 million cubic meters per day[83]. The remaining gas flows are divided among LNG, pipeline flows through Ukraine, and other pipeline routes (primarily flows from Turkey to Bulgaria, as well as flows from Belarus to Lithuania).

After 2025, when gas deliveries through Ukraine to the West are expected to stop, Russia's share of the European gas market will further decrease. Although Gazprom has stated that it will continue gas transit through Ukraine, it appears that its agreement to expand the strategic partnership with SOCAR is aimed at preparations for the coming year. According to Ukraine's gas pipeline operator, the transit of Russian gas through Ukraine to Europe decreased by 28.5% from 20.5 billion cubic meters in 2022 to 14.65 billion cubic

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[78] https://www.agora-energiewende.org/fileadmin/Partnerpublikationen/2023/LNG_Climate_and_Energy_Security_Towards_a_Comprehensive_Approach_for_Europe.pdf

[79] https://ec.europa.eu/commission/presscorner/detail/en/ip_24_1142

[80] https://sbhcenter.com/en/news/european-gas-reserves-exceed-100-billion-cubic-meters/

[81] https://www.bloomberg.com/markets/commodities

[82] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_trade_with_Russia_-_latest_developments

[83] https://oilprice.com/Energy/Natural-Gas/Can-Europe-Survive-Winter-Without-Russian-Gas-Experts-Weigh-In.html

meters last year. This reduction is part of Europe's strategy to decrease reliance on that pipeline, and Europe is preparing to phase out the use of this route. Therefore, the prospect of filling this pipeline with Azerbaijani gas via Russia and delivering it to Europe seems bleak, as Europe is overall preparing to phase out that pipeline.

Reuters reports[84] that most EU countries have reduced their dependence on Russian gas due to the invasion of Ukraine. The former main buyers of gas via Ukraine include Austria, Slovakia, Italy, Hungary, Croatia, Slovenia, and Moldova. Austria still receives a significant portion of its gas via Ukraine, while others have diversified their sources and taken steps to reduce demand.

Fighting in the Kursk direction could lead to an early and abrupt cessation of gas transit to Europe via this route. The European Commission has stated that alternative supply sources are available. They believe that Austria could import the gas it cannot get via this route from Italy and Germany. Hungary uses the "TurkStream" pipeline, while Slovenia sources gas from Algeria and other suppliers. Italy receives most of its gas from Azerbaijan and Algeria[85].

It appears that the EU is working to diversify its gas imports and has signed an agreement to double Azerbaijan's gas imports to at least 20 billion cubic meters per year by 2027. However, expanding infrastructure, increasing production, and the necessary financing for additional gas supplies from Azerbaijan are still lacking. According to Energy Aspects' analysts[86], with growing domestic consumption, there are only about 1.7 billion cubic meters of reserves available for additional exports, which is insufficient to meet the commitment. This means that Azerbaijan might only be able to increase its gas supply to Europe to a maximum of 15 billion cubic meters by 2027, even with gas imports from Russia, Iran, and Turkmenistan.

Thus, the outcome of the agreement to expand the strategic partnership between Gazprom and SOCAR is that Russia is searching for a market to sell a portion of the natural gas it cannot sell to Europe via pipelines in 2025. According to Gazprom, its daily

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[84] https://www.reuters.com/business/energy/what-happens-if-russian-gas-transit-via-ukraine-stops-2024-08-08/

[85] https://www.consilium.europa.eu/en/infographics/eu-gas-supply/

[86] https://x.com/Beefeater_Fella/status/1822016007000711346

export to Europe through Ukraine is currently more than 40 million cubic meters. Considering that the average price of gas for Europe in 2025 is expected to be $320 per thousand cubic meters, Russia could lose about $4.5 billion annually if exports via Ukraine are halted. In this scenario, Azerbaijan could be Russia's best partner for increasing gas exports, given the existing infrastructure and political relations between the two countries. Currently, Azerbaijan, which sees no prospects for financial support from the EU, may be compelled to accept Russia's offers.[87]

Let's examine the risks arising from these conditions:

1. **Decreasing gas demand in the European Union:** In 2023, the EU's natural gas imports amounted to 290 billion cubic meters, while consumption reached 330 billion cubic meters, representing decreases of 13.4% and 7.3%, respectively, compared to the previous year. By 2030, the EU's gas demand is projected to fall below the levels of 2019. This significant shift could lead to a more sustainable and diversified energy landscape in Europe, potentially reducing Europe's long-term interest in pipeline gas, including increasing gas volumes from Azerbaijan through the TAP pipeline.
2. **Reduction in the EU's dependence on Russian gas:** In 2023, the EU successfully reduced imports from Russia, its leading gas supplier, by 3.5 times, from 150 billion cubic meters to 43 billion cubic meters. The EU achieved this mainly through LNG imports, demonstrating its resilience and adaptability in changing energy dynamics. As a result of the sharp reduction in Russian pipeline gas exports, by 2030, the EU's LNG imports are expected to be about 70 billion cubic meters higher than in 2019. The increasing prominence of LNG in the EU's energy policy and its access to alternative energy sources could pose long-term risks to gas trade cooperation with Azerbaijan.
3. **Disagreements between Azerbaijan and transit countries:** The increasing gas supplies from Azerbaijan to Europe necessitate agreements with crucial transit countries such as Turkey and Georgia. However, the changing geopolitical situation in the South Caucasus, coupled with the increased likelihood of changes to the status

[87] Ibadoghlu, Gubad, Russia's Energy Interests in Azerbaijan: A Retrospective Analysis and Prospective View (September 01, 2024). Available at
SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4943332

quo maintained by the current governments in Turkey and Georgia and growing disagreements between Ankara and Baku over energy and other interests, could pose significant risks to the long-term cooperation between Azerbaijan and transit countries, potentially disrupting gas supplies.

4. **Rising costs of pipeline gas transportation and falling prices:** Another changing factor is the declining prices in the European market. On December 30, 2022, gas futures were trading at approximately $845 per 1,000 cubic meters, but by November 30, 2023, the price had dropped to $470. By the end of 2023, the price was around $464 per 1,000 cubic meters. This significant decline, attributed to warm weather, record-high gas storage capacity, and reduced gas demand in the EU, is expected to keep price increases in check through the end of 2024. However, this also reduces interest in more expensive pipeline gas exports, cautioning future investments in this sector.
5. **Changes in Azerbaijan's course toward European integration:** Recently, Azerbaijan has experienced increased political repression and arrests, along with growing ties with countries like China, which are members of BRICS and the Shanghai Cooperation Organization. These factors have cooled relations between Azerbaijan and the West, affecting trade volumes with the EU. According to the State Statistical Committee of Azerbaijan[88], Russia's share in the country's foreign trade turnover rose from 8% last year to 10% in the first half of 2024. It was also noted during the August 9 meeting of the Russian-Azerbaijani Intergovernmental Economic Cooperation Commission that trade turnover between the two countries increased by 17.5% in 2023, reaching $4.4 billion. Additionally, mutual cargo shipments increased by 10% last year and by 3% in the first half of this year. Consequently, there have been decreases in trade volumes between Azerbaijan and Europe compared to previous years.

   As can be seen, the conditions for gas trade between Azerbaijan and Europe are becoming increasingly complex, with growing risks. In particular, the rising need for investment and costs create significant challenges for cooperation in this direction.

[88] https://www.stat.gov.az/news/macroeconomy.php?page=1&lang=az

Therefore, it is crucial that Azerbaijan reassess its gas strategy and take immediate action. Abandoning its ambition to increase gas exports to 20 billion cubic meters by 2027 and shifting its policy toward delivering LNG gas to foreign buyers through Georgian ports, rather than focusing on expensive and environmentally risky pipeline gas exports, is a step that cannot be delayed. This will require substantial investments to create new infrastructure and overcome obstacles to entering Europe's competitive market via sea routes, but the urgency of the situation demands swift and decisive measures.

VI. Energy transition challenges and future steps

For the Azerbaijani government, exporting not only gas to Europe but also "green energy" has become a priority. As a result, Azerbaijan has started to pay special attention to energy production from alternative sources, as well as conserving fuel oil and natural gas used for power plants. Cooperation agreements on "green energy" projects have already been signed with the United Arab Emirates' "Masdar"[89] and Saudi Arabia's "ACWA Power."[90] Under these agreements, the construction of the 240 MW Khizi-Absheron Wind[91] and the 230 MW Garadagh Solar Power Plants[92], with a total investment value exceeding $500 million, is planned.

Although the Azerbaijani government is planning activities toward a transition to renewable energy with BP and Totalenergies, the implementation of these plans has been delayed for various reasons. For example, the foundation of the 240 MW "Shafaq" solar power plant in Jabrayil, agreed upon for construction by BP in 2022, has yet to be laid. Construction under the project is expected to begin in the second half of 2024 and will take approximately 18 months to complete[93]. Although more than a year has passed since the signing of a Memorandum of Understanding between Totalenergies and Azerbaijan's Ministry of Energy in June 2023 for the development of a 250 MW wind and a 250 MW solar energy project[94], as well as energy storage systems for the national electricity grid, no concrete steps have been taken in this area. On the contrary, BP is now taking a step back in the face of investor dissatisfaction with its energy transition strategy, and according to a source within the company cited by Reuters[95], BP has halted new offshore wind projects and has once again turned its attention to oil and gas. As for Totalenergies, the French Senate's Research Commission has submitted a report to the government on

[89] https://masdar.ae/en/global-office-locations/azerbaijan
[90] https://acwapower.com/en/projects/azerbaijan-wind-ipp/
[91] https://area.gov.az/az/page/layiheler/cari-layiheler/240-mvt-kulek-elektrikstansiyasi
[92] https://minenergy.gov.az/az/xeberler-arxivi/masdar-sirketi-ile-yasil-eneji-sahesinde-emekdasliq-imkanlari-genislendirilir
[93] https://www.bp.com/az_az/azerbaijan/home/news/hesabatlar/Etraf-muhit-ve-sosial-tesirlerin-qiymetlendirilmesi-hesabatlari/sefeq-gunes-elektrik-stansiyasi-layihesi.html
[94] https://xalqqazeti.az/uploads/pdf-files/81150/xalqqazeti-05.05.2024.pdf
[95] https://xalqqazeti.az/uploads/pdf-files/81150/xalqqazeti-05.05.2024.pdf

Total Energies' activities, recommending, in particular, that the company suspend its investments in Azerbaijan's oil and gas sector[96].

[96] https://caspianbarrel.org/en/2024/06/the-french-senate-is-against-the-activities-of-total-energies-in-azerbaijan/

VII. Conclusion

1) Even if oil prices remain at their current levels in the global market, they will not significantly reduce Azerbaijan's resource revenues. This is because, alongside declining oil production, the rising production and transportation costs are more influential factors in reducing revenues from this resource[97].

2) After the signing of a memorandum[98] of understanding between the European Commission and the Azerbaijani government in July 2022 to increase gas exports to Europe to 20 billion cubic meters. There is a pressing need to increase the investment in field development, particularly in the strategically important Shafag-Asiman, SWAP (Shallow Water Absheron Peninsula), Dostluk, or Shah Deniz Phase III. While it takes at least 4-5 years from the final investment decision to the development of the field, the strategic importance of these fields cannot be overstated. Increasing supply through the TANAP and then TAP pipelines will require significant financial resources, but increasing transmission capacity, such as by constructing additional compressor stations and pipeline sections, is of utmost importance to ensure the smooth flow of natural gas.

3) There is a disagreement between Azerbaijan and the EU over the investment needed to achieve this goal. The EU, referring to a regulation that prohibits investments in fossil fuel-related projects, does not intend to invest in the expansion of TAP. In recent years, European financial institutions, particularly the European Investment Bank and the European Bank for Reconstruction and Development, have changed their debt strategies, prioritizing climate investments, and currently do not invest in the conventional energy sector[99]. President Ilham Aliyev expressed his concern about this at the 2nd Shusha Global Media Forum: "On the one hand, Europe asks us to increase production and supply it to Europe because they desperately need it. On the other hand, they do not finance it, and this is a topic of discussion in my conversations with

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[97] Ibadoghlu, Gubad, Three Key Factors Reducing Oil Revenues in Azerbaijan (August 09, 2024). Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4920430

[98] https://ec.europa.eu/commission/presscorner/detail/en/IP_22_4550

[99] https://www.eib.org/attachments/lucalli/20230330_investment_barriers_in_the_eu_2023_en.pdf

my European colleagues. The European Investment Bank has completely stopped financing projects related to fossil fuels. The European Bank for Reconstruction and Development is also allocating almost no funding in this area.[100]"

4) It is clear that the Azerbaijani government realizes that without the EU's agreement, international financial institutions are not willing to invest in or lend to projects such as increasing gas production in Azerbaijan or expanding TAP. Therefore, other alternatives for delivering Azerbaijani gas to Europe must be considered. One option is transporting Azerbaijani gas to the European market via Russia's pipeline through Ukraine, but interest in this energy cooperation route is low.

5) During the 29th International Caspian Oil and Gas Exhibition, held in Azerbaijan as part of Baku Energy Week, Turkey's Minister of Energy and Natural Resources, Alparslan Bayraktar, visited Baku and participated in the renewal of the agreement between Turkey's BOTAŞ and Azerbaijan's Gas Supply Companies, extending the natural gas supply contract that was set to expire this year until the end of 2030. Additionally, four more agreements were signed between BOTAŞ and SOCAR, one of which involves the transportation of Azerbaijani gas through Turkey via the Turkey-Bulgaria interconnector[101]. The current capacity of this interconnector is 3 billion cubic meters per year[102]. Azerbaijan has already started exporting up to 600 million cubic meters of gas per year to Europe through this route. Regarding TAP, its capacity is expected to increase to 13 billion cubic meters by the end of 2026.

6) In the long term, Azerbaijan could convert its natural gas into LNG (Liquefied Natural Gas) and sell it on the European market. For this, the Azerbaijani government would need to build an LNG plant and transport its product to European markets via tankers from Georgia's Kulevi oil terminal and port, which is owned by SOCAR[103]. Compared to exporting natural gas via pipelines, delivering LNG by tankers is not only less expensive but is also considered an environmentally favorable alternative.

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[100] https://president.az/az/articles/view/66533

[101] https://www.botas.gov.tr/Icerik/natural-gas-agreement-with-aze/972

[102] https://ec.europa.eu/assets/cinea/project_fiches/cef/cef_energy/7.4.2-0061-BG-S-M-14.pdf

[103] https://www.kulevioilterminal.com/

7) Finally, it should be noted that the green energy era will begin globally after this decade, and Azerbaijan has international commitments to reduce carbon emissions. Therefore, significant efforts must be made to direct investments toward the green energy sector. Unfortunately, in 2023, the share of green energy generated from alternative sources and hydroelectric power plants in total energy production was only 5.85%, indicating[104] slow progress in this area.

[104] https://www.energyinst.org/__data/assets/pdf_file/0004/1055542/EI_Stat_Review_PDF_single_3.pdf