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Winter is Coming! European Energy Crisis and Turkey



THE LAST CALL BEFORE THE NEW ENERGY CRISIS

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TURKMEN NATURAL GAS TO EUROPE IS STILL AN OPTION

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In This Issue...

06 Winter is Coming: European Energy Crisis and Turkey

We are excited to start our fourth year at Synergy, where we published our first issue in September 2019. While preparing the first issue of the new semester, all our authors have prepared articles on the energy crisis in Europe...

09 Turkey's Role in Solving the Energy Crisis

According to Fatih Birol, Executive Director of the International Energy Agency, the first "global energy crisis" began on February 24, 2022. It, brought not only the meaning of war, which began with Russia's invasion of Ukraine but also a massive burden on the global economy...

12 The Last Call Before the New Energy Crisis

REPowerEU, the plan published by the European Commission in recent months, which includes measures to reduce Europe's dependence on fossil fuels does not seem to be enough. The plan promises affordable, secure and sustainable energy for Europe...

14_____Turkmen Natural Gas to Europeis Still an Option

The ongoing Ukraine Crisis, the impact of which is felt on a global scale, confirms that the revision of energy policies implemented by countries is a matter of economic security. Of course, it is clear enough that the inability of countries...

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ABOUT US





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Weekly Puzzle Prepared by Büşra Öztürk



Across

1. A concept that encloses the borders of Turkey in the Black Sea, Marmara, Aegean and Mediterranean

 The country that generates the most electricity globally overall by using a nuclear power

 The symbol of the silvery metal used mostly in LEDs, semiconductors, and electrical circuits
The term that expresses the production of

usable gas from organic wastes

13. A well-known environmentalist and author of the book "Earth in Mind", who operates in many areas of environmental studies and offers educational models for nature conservation

16. The name of the report for the calculation of the possible damages to the environment, the determination of the measures to be taken or the minimization of the planned projects

18. The Most common hydrogen fuel produced from fossil fuels, which releases carbon dioxide that cannot be used in the process

19. The unit commonly used in electricity billing which expresses the amount of energy produced or consumed per hour.

20. The pipeline transferring Azerbaijan gas to Europe via Turkey

Down

2. The name of the organization that collects and serves financial and statistical data about energy supply, reserves, production, demand, etc. and carries out statistical and solutionoriented studies under the roof of the US Department of Energy

6. The digital technology of energy networks that allows for two-way communication between suppliers and consumers

7. Russia's largest oil export port

8. A significant greenhouse gas associated with global warming

9. A system of producing heat and electricity simultaneously in order to use energy more effectively

 The property of liquid petroleum with a low density and freely flowing at room temperature
The country which has the largest lithium reserves

12. The called name of Volkswagen China's first fully electric flying vehicle

14. The name given to the gas in sedimentary rocks, which can produce oil and gas when heated, because it usually contains organic matter with a fine-grained and layered structure

15. An abbreviation of power plants that convert energy particles from sunlight into electrical energy

17. The name of the most important and oldest pipeline transporting Russian oil to Europe

Previous Week's

Correct Answers



Across

4. The process of replacing fossil-fuel-based technologies with technologies that use electricity as a source of energy

5. The country which has had the highest recycling rate since 2016

7. The country which is a major producer and exporter of natural gas, oil and oil products

8. The name of the meeting where climate and energy policies cooperation was also discussed by seven developed countries

11. The group of wind turbines used for electricity generation

12. The shift from an energy system based on fossil fuels to one based on renewable energy sources that produce low carbon emissions

13. A unit of volume measurement that is mostly used to describe amounts of oil and gas by U.S. industry

15. A synthetic fuel that can be produced from water, fossil fuels and biomass to obtain energy by the methods of combustion and fuel cell

17. The term related to concerns about the inequitable outcomes of climate impacts and the fairness of policies to address climate change

18. An abbreviation for the group of elements that have diverse energy applications such as use in magnets and electric motors in wind turbines or in petroleum refining

Down

1. The conversion of waste materials into new materials and objects

2. The country which has had the lowest recycling rate since 2018

3. The term for ensuring a reliable energy supply against the event of collapses such as price increases or fluctuations in supply

5. The city where the 2021 United Nations Climate Change Conference or COP26 was held

6. Finnish state energy company that sells the nation's natural gas

8. A refinery product made from a mixture of petroleum liquids used as an engine fuel in vehicles

9. A non-profit organization aiming to exchange ideas on key energy issues in Southeast Europe

10. Executive Director of the International Energy Agency since 2015

14. An organization that aims to coordinate and unify petroleum policies of its Member Countries

16. The term for achieving a carbon balance in which the amount of carbon added to the atmosphere equals the amount removed

Winter is Coming: European Energy Crisis and Turkey Gökberk Bilgin

We are excited to start our fourth year at Synergy, where we published our first issue in September 2019. While preparing the first issue of the new semester, all our authors have prepared articles on the energy crisis in Europe, as we are going through a historical period to work on energy policies.

Efforts to reduce Europe's dependence on Russian natural gas, which has been increasing since the late 2000s, came to a head with the outbreak of the Russian-Ukrainian war. The International Energy Agency published a 10-point plan to reduce dependence on natural gas, which included energy conservation, no new natural gas contracts with Russia, and increased energy production from alternative sources.

The REPowerEU plan and the political measures taken by countries to support this policy aim to accelerate the start of a new process as much as possible. The most critical problem is that even if the austerity plan succeeds, no alternative can be created within a few years to match the amount of gas imported from Russia. The NordStream 1 pipeline, through which gas trade with Russia continues, was recently operated at 20% capacity for maintenance, causing electricity prices in Europe to the peak.

As shown in the Figure 1, European electricity prices have increased more than four times on average in Germany, Italy, and France in the day-ahead spot electricity market. In Turkey, there was a 3.3-fold increase compared to last year.

In Spain and Portugal, governments can keep electricity prices low for the time being by creating additional resources to prevent electricity price increases from exerting pressure on the population. This policy is estimated to cost Spain \in 6.3 billion and Portugal \in 2.1 billion. In Turkey, on the other hand, Energy Exchange Istanbul (EXIST) manages to keep the price low by setting a ceiling price at the end of each month.

EXIST has set an upper limit of 4000 TRY/MWh for August 2022, and we have already reached this limit. I could not

Electricity Prices in Europe



The interruption in natural gas supply has caused day-ahead electricity prices to hit record highs in many countries.



EUR/MWh * The prices are regulated in Turkey and Spain.

find any information on how much this would cost for Turkey and where the funding would come from, but if we scale up to Spain and Portugal, we can make an estimate.

So, what is the latest situation in the natural gas sector in our country? Natural gas consumption in Turkey has been gradually increasing in recent years. According to the "Annual Natural Gas Activity Report" published by the Energy Markets Regulatory Authority (EMRA), our annual natural gas consumption increased from 45.2 billion cubic meters in 2019 to 58.7 billion cubic meters in 2021. An analysis of consumption categories reveals that the main increase was in natural gas and electricity generation with 8.9 billion cubic meters. Residential natural gas consumption increased by 2.7 billion cubic meters to 16.7 billion cubic meters in 2021.

Turkey imported 26 billion cubic meters of natural gas from Russia in 2021. If we ignore the fluctuations in recent years due to the pandemic, we can say that this is the average import amount. As for natural gas storage, Turkey's capacity is around 3 billion cubic meters as of 2022. It covers only 5% of our annual consumption. According to the statement made by the Turkish Ministry of Energy and Natural Resources, this capacity is planned to be increased to 10 billion cubic meters in the coming year. When the storage capacity of European countries, where the crisis atmosphere is felt intensely, is examined, it is observed that they can store 25% of their annual consumption. Even if Turkey's current capacity increases to the 10 billion cubic meters planned for 2023, the fact that we can only store 12% of our consumption reveals how serious problems we may face if we face a crisis similar to the one in Europe.

In this context, the LNG option, which is considered to be an alternative, may not provide us with the gas we need because demand is too high. Even if we find enough gas with LNG, we may have difficulty meeting the additional cost of rising prices. Therefore, we are going through a time when energy-saving practices should also be prioritized in Turkey.



Therefore, we are going through a time when energy-saving practices should also be prioritized in Turkey. As the Turkish Lira continues to depreciate against other currencies, we are facing a period in which we have less purchasing power than Europeans, even with our relatively cheap electricity prices. We need to quickly finalize our preparations to avoid the devastating effects that a political problem with the countries we export gas to or a technical glitch that could disrupt the gas flow could have on our economy. The phrase "Winter is coming!" from Game of Thrones is also applicable to us, even if we are trying to separate ourselves from the crisis in Europe.

When we started publishing Synergy last year, we were talking about Turkey's ratification of the Paris Climate Agreement, the positive atmosphere before COP26 and the transition to clean energy. If you had asked people that day to make projections for the coming year, very few would have said the scenario we are experiencing now, and perhaps it would not have been taken seriously. The increasing dynamism of the sector brings with it problems that are not easy to foresee. I hope to enter a period in which we can develop better solutions with the experiences we will learn from this crisis. In its new period, Synergy will continue to convey the latest energy, climate, and sustainability developments to its readers in Turkish and English. Our Synergy Gündemi program on YouTube, which we started during the pandemic curfews and commented on our articles, will also be on the air with a new episode with our first issue this season.

Turkey's Role in Solving the Energy Crisis Sarper Göksal

According to Fatih Birol, Executive Director of the International Energy Agency, the first "global energy crisis" began on February 24, 2022. It, brought not only the meaning of war, which began with Russia's invasion of Ukraine but also a massive burden on the global economy, which faced a corresponding energy supply shock and high energy prices. Europe was undoubtedly the most affected by the sanctions imposed on Russia after Russia invaded Ukraine; the dependence of European countries on Russia, especially for energy and natural gas, led Europe to seek to diversify its sources.

Turkey is in a position to play an essential role in the natural gas predicament of Europe, which is most affected by the global energy crisis. Assoc. Prof. Dr. İsmail Sarı stated that the energy crisis caused by the Russian-Ukrainian War would bring new gas corridors to the agenda in the Middle East, and Turkey will play a role in these gas corridors. The energy supply shock in Europe due to the current war situation has led European countries to turn to gas resources in the Middle East to secure gas supplies before the winter season. On the other hand, due to the European Union (EU)'s plan to end the dependence of European countries on Russian gas within the next five years, it has become inevitable to look for alternatives in other geographies.

In the Trans Anatolian Natural Gas Pipeline (TANAP) project, which is seen as the most crucial alternative to secure gas supply, Turkey is acting as a transit country for natural gas. TANAP is a pipeline that aims to transport Azerbaijani natural gas to Europe via Turkey, in other words, to turn Turkey into Europe's energy transit route. TANAP is not only about transferring Azerbaijani gas to Europe; it also aims to significantly contribute to Turkey's and Europe's growing energy demand and security of supply. One factor that makes TANAP so essential is the European Union. EU Commission President Ursula von der Leyen stated that the EU is turning to more reliable energy suppliers and will continue to work on substituting Russian gas. Ursula von der Leyen's statement that the EU is prepared for the possibility of a

Gas Supply to Europe



The capacity of other alternatives to Russian natural gas is not yet sufficient to meet demand.



complete cut-off of Russian gas is a radical and revisionist move because the EU is heavily dependent on Russian gas. The EU imports around 155 billion cubic meters of natural gas from Russia annually. The EU imports 45 percent of its gas purchases and 40 percent of its consumption from Russia. In short, the EU needs a total of 387.5 billion cubic meters of gas. The EU's complete cut-off of cooperation with Russia has also highlighted the importance of TANAP in averting the gas crisis. In this context, the EU's contacts with Azerbaijan accelerated, and a goodwill agreement was signed to increase natural gas purchases from Azerbaijan and double the existing capacity. The EU will get its gas supply from Azerbaijan, but the transfer of this gas will be done through Turkey because Turkey connects Europe to a gas-rich country like Azerbaijan.

TANAP starts the transportation of Azerbaijani gas from the Turkish Georgian border, passes through 20 provinces until Western Thrace, and ends at the Turkish-Greek border. Azerbaijani natural gas will be transferred to the Trans Adriatic Natural Gas Pipeline (TAP) at the Turkish Greek border and transported to the Adriatic Sea via Greece, Albania, Italy, and Italy to other European countries. Although the share of Russia in the natural gas imports of European countries such as North Macedonia and Bulgaria is 100%, these countries will be given priority in the use of gas from TANAP and TAP in case of a Russian gas cutoff. In addition, Russia's share in Italy's natural gas imports is 33%; in the event of a Russian gas cut-off, the gas that would be transferred to Italy through TAP would mean that Italy would be another priority country for gas transfers. According to Gulmira Rzayeva, Research Fellow at the Oxford Institute for Energy Studies, Turkey can quickly ship gas from Azerbaijan to Europe via land and sea. In addition, the European leg of TANAP, TAP, has an annual capacity of 10 billion cubic meters. Of course, this is not enough to meet Europe's gas needs. However, according to President Erdogan, TANAP's transport capacity is planned to be increased to 24 and then 31 billion cubic meters in the future.

On the other hand, Algeria is at the forefront of Europe's search for alternative sources to Russian gas. Turkey's capacity to transfer natural gas will increase in the future,



but in the meantime, Europe will have to look for other alternatives. There are three significant pipelines carrying natural gas from Algeria to Europe. The first one is the Maghreb-Europe Gas Line. It has an annual capacity of 12 billion cubic meters and transports Algerian natural gas to Morocco, Spain, and Portugal. Another is the Medgaz Pipeline. This line, which will transfer natural gas between Algeria and Spain, has an annual capacity of 10 billion cubic meters. Last but not least is the Trans-Mediterranean Gas Line. This line transfers natural gas from Algeria to Tunisia and Italy and has an annual capacity of 33 billion cubic meters. In short, Algeria has come to the rescue of European countries such as Spain and Portugal, where TANAP and TAP could not provide the gas transfer.

In sum, it is undeniable that Europe needs an alternative source to Russian gas, not only in the short term but also in the long term. It will be difficult for the EU to cooperate with other countries and look for alternative sources to substitute Russian gas. However, other regions such as Turkey and Algeria have a high contribution capacity and can play an essential role in solving the gas crisis. Turkey is the only country that can bring the Caspian Sea gas resources to European markets without involving Russia could reestablish Turkey as a regional actor and as one of the decision-makers that will make a name for itself in global politics and resolve disputes. However, Turkey's rise to diplomatic prominence is not easy; political, financial, and infrastructural challenges can be overcome. Overcoming these obstacles as soon as possible is beneficial both for Turkey's position in the international arena and for Europe's gas supply.

The Last Call Before the New Energy Crisis Yaren Öztürk

REPowerEU, the plan published by the European Commission in recent months, which includes measures to reduce Europe's dependence on fossil fuels does not seem to be enough. The plan promises affordable, secure and sustainable energy for Europe. In the short term, it seeks alternatives to gas, oil and coal. In the long term, it aims to accelerate the green transformation across Europe and invest heavily in renewable energy. At the same time, the plan calls for people, businesses, and organizations to take matters into their own hands and save energy. Its implementation in Europe is likely to be painful. These days temperatures in Europe are at their highest levels, the implementation of the plan is becoming more complex, and governments have started to publish measures one by one.

The main reason for Europe's measures is that if the Kremlin orders a complete cut-off of gas from Russia, Europe will experience one of its coldest winters with a deficit of about 45 billion cubic meters between August and March, which is about 15% of the gas consumed by European Union member states almost every year. While the effects will not be the same everywhere in Europe, for now, they are preparing for the worst-case scenario of a large-scale energy crisis. In Germany and Italy, two countries most dependent on Russian gas, the effects of a gas cut-off would be felt most strongly in industry and production and affect home heating. The consequences would not be as severe in Finland and Sweden, where gas consumption is a small fraction of energy consumption. Before examining what measures countries are taking, it is essential to note that the European Union's gas reserves are behind the target. Although the target for November 1 is 80%, the reserves are currently 77% full. The extent to which the European Union, which claims that it will reduce its gas demand by 15% by March, will be able to achieve this under the current conditions is among the debates.

On a country-by-country basis, although France is a European country that meets 70% of its energy needs from nuclear energy, it aims to reduce its energy consumption by 10% in the next two years. France, which published a draft energy saving plan last month, announced that it would prohibit the doors of heating and air conditioning units from being left open, and those who leave them open will be fined \notin 750. It is also on the agenda to ban heaters or air conditioners in outdoor places such as bars, cafes and terraces. In addition, the government has stated that it aims to restrict the use of illuminated advertising signs between 1 a.m. and 6 a.m. in every city in the country. For now, the measure applies to cities with less than 800,000, which critics say is insufficient.

Natural Gas Storage in Europe



77.4%

As of August 23, 2022, European countries have managed to fill 77.4% of their natural gas storage. This amounts to 20.74% of their total consumption.



Source: Aggregated Gas Storage Inventory

On the other hand, Germany is perhaps the most vocal advocate of energy conservation in Europe but has yet to devise an effective plan. Among the regulations that will become law in August, the government has warned against heating rooms on public property and in companies where people do not spend much time, such as corridors or large halls. Many cities and state governments in Germany have already taken measures such as reducing street lighting and lamps or setting temperature limits in buildings. These measures have been criticized by critics who say that due to reduced street lighting, people will feel less safe and will not want to go out at night. Italy, which has said it does not have a plan for now and is discussing similar measures as Germany, aims to reduce 7% of its gas demand by March by increasing coal-fired generation.

In Poland, where Russia has cut off gas supplies, political debates about how this winter will be spent. Critics say the people have been left to their own devices regarding how to heat their homes, and the government has called for insulation while critics talk of a coal shortage scenario. Greece, one of our neighbouring countries, has recently announced a plan called "Operation Thermostat". The plan calls for reducing energy consumption by 10% this year and 30% by 2030. Windows and cooling systems in public buildings are being renovated to increase energy efficiency.

It is also essential that air conditioners in public properties are not set at temperatures lower than 27 degrees Celsius in summer, and that company employees do not leave their computers on at the end of the day. Spain, which is not highly dependent on Russian gas but has taken the most radical decisions, aims to reduce its gas consumption by 7% by March. Government decisions that have been the focus of criticism are that businesses and public spaces must keep the air conditioning at 27 degrees in summer and 19 degrees in winter. With Spain facing a heatwave across the country, there are questions about how this decision will be implemented. The decree, which will be in force until November 2023, includes the obligation for shops to close their doors when their heating systems are running, followed by installing automatic locks and switching off shop window lights at 22.00 at the latest. The situation of failure to comply will result in fines ranging from €60,000 for minor infringements to €100 million for severe offences.

As 2022 gets closer to an end, in a world plagued by epidemics, climate crises, water security and still war, powerful governments are trying to insulate themselves from the coming crises. While a series of decisions are being lined up in perhaps the last exit before the energy crisis, how feasible the measures are and how adequate the decisions are will be deeply felt in Europe next winter.

Turkmen Natural Gas to Europe is Still an Option Erkin Sancarbaba

The ongoing Ukraine Crisis, the impact of which is felt on a global scale, confirms that the revision of energy policies implemented by countries is a matter of economic security. Of course, it is clear enough that the inability of countries dependent on foreign energy resources to diversify their import routes sufficiently poses a threat to the economic security of states, and this issue is widely discussed on the world agenda. On the other hand, diversification of existing markets and export routes is also a vital strategy for establishing economic security for countries exporting critical energy resources.

With total natural gas reserves of 13.6 trillion cubic meters, Turkmenistan has the potential to become a key player in the energy sector. With these reserves, Turkmenistan holds 7.2% of the world's natural gas reserves. In 2021, the country broke the record for natural gas production in its history with an annual production of 83.77 billion cubic meters (bcm). Having consolidated its role in the global energy market, Turkmenistan constitutes an essential alternative for the European market, which needs a stable natural gas supply.

Looking at Turkmenistan's natural gas exports, China is the largest buyer. In 2021, China imported 34 bcm of Turkmen

natural gas. While this figure corresponds to about 40% of Turkmenistan's annual production, China's sizable share in Turkmen gas exports brings some risks and vulnerabilities to Turkmenistan. The clearest example of this is the March 2020 decision by PetroChina to suspend natural gas purchase contracts with Central Asian countries, led by Turkmenistan, after declaring force majeure. The main reason for the suspension decision was the drop in energy demand caused by the Covid-19 pandemic. On the other hand, this has prompted the Turkmen government to take measures to address potential demand fluctuations in major energy importers such as China.

Considering all these developments, it is not surprising that Turkmenistan is attempting to access the European market through the Southern Gas Corridor, in which Azerbaijan and Turkey play an active role. Although this is not the first time that Turkmenistan's inclusion in the Southern Gas Corridor has been on the agenda, it seems that the parties have taken concrete steps to an unprecedented extent. Following the visit of the Turkish Vice President to Turkmenistan, the public opinion is that a consensus has been reached on the transmission of Turkmen gas to Europe via the Trans Adriatic Pipeline via the Trans Anatolian Natural Gas Pipeline (TANAP) Project.



Although it is not yet clear how Turkmenistan's natural gas will be delivered to Europe within the Southern Gas Corridor, some options are being considered. One of the options is the transmission of Turkmen natural gas to Azerbaijan via Iranian territory. The approach underpinning this idea is "the natural gas swap agreement" currently signed between Turkmenistan, Iran, and Azerbaijan in November 2021, which provides for natural gas transfers between the three countries. Under the agreement, up to 2 bcm of natural gas per year will be transferred from Turkmenistan to Iran. The aim here is to ensure natural gas supply to the northern regions of Iran, especially during the winter. In return, Iran will deliver natural gas to Azerbaijan equivalent to the volume of natural gas delivered from Turkmenistan. On the other hand, it is debated whether there are obstacles to increasing the volume of the mechanism established under this agreement. Among the possible obstacles are the fact that Iran is subject to Western sanctions, as well as Iran's limited natural gas transmission infrastructure to Azerbaijan.

Another option considered for transmitting Turkmen natural gas to Europe is the Trans-Caspian gas pipeline project, which came to the agenda nearly two decades ago and has been much debated. Although intensive diplomatic efforts were made in the following years to realize the Nabucco pipeline project, it could not compete with the South Stream gas pipeline project, and its construction could not be agreed upon. Under the project, Turkmen natural gas is planned to be transported first to Azerbaijan via a pipeline under the Caspian Sea and then to Europe via Turkey's TANAP Natural Gas Pipeline through Georgia using the existing natural gas transmission infrastructure.

The Southern Gas Corridor initiative is designed for longterm interests. The energy transmission line investments under the initiative have been realized by identifying strategic opportunities for the future. For the Nabucco Natural Gas Pipeline Project, which aims to transport Turkmen natural gas from the Caspian Sea to Europe, the initial projected transmission capacity is 10 bcm. Accordingly, a satisfactory result emerges when the investments within the Southern Gas Corridor are evaluated. In case of additional investments, sufficient infrastructure capacity can be provided for the transportation of Turkmen natural gas to Europe.

With the South Caucasus Pipeline (SCP) expansion project (SCPX), which first connects the Shah Deniz natural gas fields to mainland Azerbaijan and then connects with TANAP via



Georgia, the capacity of the South Caucasus Pipeline has reached 24 bcm per year as of 2018. This capacity can be increased to 31 bcm with additional investments.

In the case of the Trans Anatolian Natural Gas Pipeline (TANAP) infrastructure, the annual natural gas transportation capacity of 16 bcm can be increased to 31 bcm with the addition of five compressor stations along the pipeline route. The Trans Adriatic Natural Gas Pipeline (TAP), which transits natural gas from Turkey to Europe as part of the Southern Gas Corridor, has an operational capacity of 10 bcm annually. In addition to the modifications of the existing compressor stations, it is possible to reach the capacity of 20 bcm by adding two new compressor stations along the pipeline route.

As a result of these additional investments, the Southern Gas Corridor can reach sufficient capacity to transmit Turkmen natural gas to Europe. Therefore, with its natural gas reserves and energy investments, Turkmenistan has the potential to become an alternative energy supplier for European countries. The geopolitical turmoil in the energy markets requires serious revisions in countries' energy policies. While it seems inevitable that states and companies will turn towards sustainable energy transmission routes, it is clear that political biases should be avoided in the search for new alternatives. We are going through a period when the main focus of energy policies should be to ensure stability in the transmission of energy resources. In this respect, the necessity of transmitting Turkmen natural gas to Europe through the Southern Gas Corridor is better understood, both because the necessary infrastructure has already been established at some point and because the government of Turkmenistan is seeking new cooperation in the field of energy. There is no doubt that the integration of Turkmenistan into the Southern Gas Corridor initiative will have a positive impact on regional energy security.



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