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Research Article

**PRODUCTION AND CONSUMPTION TRENDS OF NATURAL GAS OF
TURKMENISTAN THE YEARS FROM 2009 TO 2019****Arslan VEPAYEV* & Ozan DENİZ****

*Çanakkale Onsekiz Mart University, Institute of Postgraduate Education, Department of Energy Resources and Management, TURKEY, e-mail: arslanvepayev@gmail.com
ORCID ID: <https://orcid.org/0000-0003-4946-4917>

**Çanakkale Onsekiz Mart University, Faculty of Applied Sciences,
Department of Energy Resources and Management, TURKEY, e-mail: ozandeniz@comu.edu.tr
ORCID ID: <https://orcid.org/0000-0002-9984-9893>

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ABSTRACT

In this study, natural gas production and consumption of Turkmenistan has been mentioned for years. Leaving the Soviet system in 1991, Turkmenistan started to take the first steps to move its economy from a closed system to a free market system. To raise its economy to the level of developed states, Turkmenistan has come by implementing new regulations in social and industrial areas within 10 years.

Turkmenistan has chosen an international, open, and pluralist economic model since its independence. This model has projected the "10-Year National Development Program" to ensure the economic development of the country and to be carried out according to the targets and plans. The main goal of the development program can be shown as placing the country among the first world countries, a social market economy, managing the country within its means, and encouraging international investors to structural and economic investments.

Today, World trade represents the liberalization trend. Liberalization of trade and markets provides the necessary foreign savings and foreign exchange needs to finance economic development with the help of foreign investments in developing countries such as Turkmenistan. Being a country with very rich natural resources, Turkmenistan aims to improve the country's economy by processing these resources and presenting them to the world markets. According to data in 2009, Russia is the largest importer of natural gas, the country's most important export product, while Iran is the second. During this period, exports to China are at a low level. However, while gas exports to Russia and Iran decreased to very low levels over time, China became the biggest consumer of Turkmenistan natural gas. In this, the relations of countries, energy needs, and investments made by demanding countries and the geographical distribution trends of the natural gas consumption-supply demand balance in the world. 2009-2019 is the economic advancement decade in the energy sector of Turkmenistan as a result of exploring and producing new gas reserves in the country, after which consumers gained conscious consumption as well as concluding new agreements with investors.

Keywords: Turkmenistan, Natural gas, Energy.

1. INTRODUCTION

Turkmenistan, located in the east of the Caspian Sea between 53-66 degrees east longitude and 36-43 degrees north latitude, has an area of 488,100 km². Turkmenistan, which has the largest surface area after Kazakhstan among the Central Asian countries, is washed by the Caspian Sea in the west and the Amuderia River in the East. The Karakum Desert occupies four-fifths of the area of this country. Turkmenistan, about 80% of which is desert in nature, borders with Uzbekistan in the east and northeast, the Caspian Sea in the west, Kazakhstan in the north, Iran in the south, and Afghanistan in the southeast (Hojamuradov, 2005) (Arxiv, 2020).

Turkmenistan was a colony of the Russian Empire and after the Union of Soviet Socialist Republics (USSR) from 1881. In this colonial system, each colony had its mission to provide its products to governance, Moscow. The mission of Turkmenistan was the production and maintenance of organic cotton because of its agricultural infrastructure. For many years, the country thought that its main economical “wealth” is cotton. Russian Empire and the Soviet Union were exploring petroleum and natural gas by their scientists.

After the collapse of the USSR, all ex-colonial countries had an economical-crisis because of the countries’ focus on their “mission products.” Turkmenistan governance didn’t have enough technical and theoretical knowledge and background about its natural reserves. Coastal countries of the Caspian Sea: Iran, Azerbaijan, and Kazakhstan started to utilize site petroleum earlier.

After several years Turkmenistan started to explore new natural reserves: natural gas in the Karakum desert and petroleum in the Caspian Sea. After the discovery of petroleum in the Caspian Sea, the route of natural crystal salt and iodine was turned up. Currently, the country’s crucial natural resources are petroleum, natural gas, sulfur, and natural crystalline salt.

2. ECONOMIC STRUCTURE OF THE COUNTRY AND ITS TRADE POLICY

In the period of the Union of Soviet Socialist Republics (USSR), the economic structure of Turkmenistan, like other Central Asian Republics, was based on supplying processed agricultural products and cotton to the Center and transferring the obtained raw materials to Russia following the economic agreement policies of the USSR period. The focus of the economy on the production of raw materials and the use of these raw materials in the industries and other republics caused other sectors to fall behind (Hojamuradov, 2005).

The country has large-scale gas and oil resources, and the government attaches great importance to the development of the energy sector and conducts a series of projects to unlock the sector's potential. The success of these projects depends to a great extent on the entry of foreign resources into the country (DTM, 2002) (Rutka, 2017).

The fact that the economy is primarily a raw material production, prevented the economy from deteriorating after independence. The main branch of the economy is associated with the extraction of natural gas and oil (DTM, 2002).

Turkmenistan has refused to take corrective measures because it considers social stability a necessary condition for economic growth. The years after 1991 saw a sharp decline in the country's gross domestic product (GDP). The cumulative decline in GDP between 1992 and 1996 was 50% (DTM, 2002).

General trends in the economic activity of Turkmenistan are being shaped by changes in the energy sector, which is the cornerstone of the economy (DTM, 2002). However, the economy of Turkmenistan did not benefit from the rise in energy prices. The reason for this is

that the unpaid and accumulated debt of some countries of the Commonwealth of Independent States (CIS) to Turkmenistan increased as a result of their non-payment for gas imports, and thus, gas production in Turkmenistan decreased. The suspension of gas exports to Ukraine due to payment problems in 1997 also led to a decline of 11.3% of GDP in the same year (Özsu, 2003).

However, there has been a continued economic recovery since 1997, and after independence, GDP grew for the first time in the period 1997-1999. This growth was driven by improved yields for cotton and wheat, as well as increased production of gas and oil. The growth that continued in 2000 was largely due to the increase in gas exports to Russia. At the end of 1999, Turkmenistan signed an agreement with Russia on the sale of gas for 20 billion cubic meters (bcm), later this volume was increased to 30 billion cubic meters. An agreement on the sale of 30 bcm of gas was signed with Ukraine for 2001 (Özsu, 2003).

In the early years of independence, the geographical distribution of goods exported by Turkmenistan and the main structure of the commodity composition had a very complex structure based on the export of cotton and gas, represented in the main markets of the former republics of the Soviet Union. However, in 1992, an obligation to produce international prices and payments in foreign currency was introduced in commercial transactions with the CIS. After the authorities of Turkmenistan were obliged to make payments in foreign currency, there were constant problems with the prices for gas exports between Turkmenistan and these countries (Odabaş, 2001).

In addition to non-payment of debts related to gas exports to the former Soviet republics at world prices, failure to pay the accumulated debt on time caused significant cash problems in 1994. Russia's refusal to allow Turkmen gas to flow into markets that will generate foreign currency has exacerbated these problems. However, the inflow of money into the country began with Ukraine's payments in foreign currency and give goods in return in April 1995. A pledge from countries such as Azerbaijan, Georgia, and Armenia to pay off the gas debt in 1998 brought relief. In 1998, the same problem was faced with Ukraine, and the government of Turkmenistan at the time did not export natural gas in protest. However, in the following period, a mutual agreement was reached between the two countries, and the export of natural gas began (Odabaş, 2001).

The main objectives of Turkmenistan in trade policy; diversification of the country's export markets and an increase in added value in the process of obtaining raw materials that it exports domestically (Odabaş, 2001).

Another factor that is taken in increasing Turkmenistan's export earnings is infrastructure investment, which will provide some of the opportunities needed for significant investment. Turkmenistan is also making various efforts to enter new export markets where payments are made in foreign currency, especially in Eastern Europe (Odabaş, 2001).

3. PRODUCTION AND CONSUMPTION TRENDS OF NATURAL GAS OF TURKMENISTAN

3.1. Natural Gas Production Companies in Turkmenistan

Former President of Turkmenistan Saparmurat Niyazov (Turkmenbashi), after discovering natural gas reserves in the country, concluded the first agreements with Turkey and the Chinese government for the production and operation of gas. From the Turkish company, Calik Enerji Sanayi ve Ticaret AS (Çalık Enerji) and the China National Petroleum Corporation (CNPC) came to Turkmenistan and continued to work on the exploitation of natural gas. In 2008, companies such as Gaffney, Cline & Associates also came to the country and were the

first to edit natural gas for other companies. Subsequently, companies such as Hyundai Engineering and Petrofac came to the country and invested.

3.2. Natural Gas Reserve Distribution, Production, and Consumption of Turkmenistan and Trade Relation with the other Asian Countries by Years

Turkmenistan, which has the largest natural gas reserves in Central Asia, is also the country with the largest export potential. Natural gas exports to Russia, the mainstay of Turkmenistan's export revenues, have recently been replaced by the Chinese market with 30-35 Bcm / year exports. Exports to Russia have completely ended in 2015 (CAGP, 2020).

With the transition from Russia to China as its main export destination, Turkmenistan's gas sector has changed in two important ways. First, Turkmenistan, which shuns away from international oil companies and is reluctant to work with foreign investors, now works with two foreign companies (China National Oil Company and Petronas) for more than a quarter of its gas production. Second, after many years of planning, Turkmenistan started a large petrochemical factory in Kiyanli, which will contribute significantly to the economy in 2018 (CAGP, 2020). It is expected that pipeline construction works for transporting the country's natural gas to other countries will continue in the 2020s. The possibility of increasing exports of Turkmenistan gas to China, a major consumption area, will be possible with the construction of the 4th part of the Central Asia - China pipeline system planned to be made between two countries (CAGP, 2020) (OE, 2020).

As seen in Table 1, Turkmenistan exported natural gas to Russia from 2010 to 2015 but has ended natural gas sales since 2016. Likewise, Turkmenistan, which exports natural gas to Iran until 2016, has gradually decreased its exports to the country and approached zero in 2018. While it did not export gas to its neighbor in the west, Azerbaijan until 2017, it has initiated 1 Bcm natural gas sales since 2017. On the other hand, while there was no export in 2010 in Kazakhstan, which is its close neighbor, the natural gas export continues with a small increase in 2014, starting from 2011, then pausing in 2012 and reaching up to 1.5 Bcm in 2018. Finally, between 2010 and 2018, natural gas exports to China are expected to continue to increase while reaching 14.5 Bcm, increasing by approximately 10 times. China alone is the region that consumes almost all the natural gas produced in the country.

Table 1. Gas Balance of Turkmenistan (BP, 2020) (OE, 2020)

	YEARS								
	Numbers are given in Bcm (billion m ³)								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Production	40.1	56.3	59.0	59.0	63.5	65.9	63.2	58.7	61.5
Total Gas Balance	40.1	56.3	59.0	59.0	63.5	65.9	63.2	58.7	61.5
Domestic Consumption	18.9	20.7	17.6	18.7	20.0	27.0	25.5	22.9	24.5
Export	21.2	35.6	41.4	40.3	43.5	38.9	37.7	35.8	37.0
To / Through Russia	10.7	11.2	10.9	10.9	11.0	3.1	0	0	0
To Iran	7.0	10.0	9.0	5.0	6.0	7.0	7.0	0	0
To Azerbaijan	0	0	0	0	0	0	0	1	1
To Kazakhstan	0	0.3	0	0.3	1	1	1.3	1.5	1.5
To China	3.5	14.1	21.5	24.1	25.5	27.8	29.4	33.3	34.5

Figure 1. Turkmenistan's Gas Infrastructure (OIES, 2015)

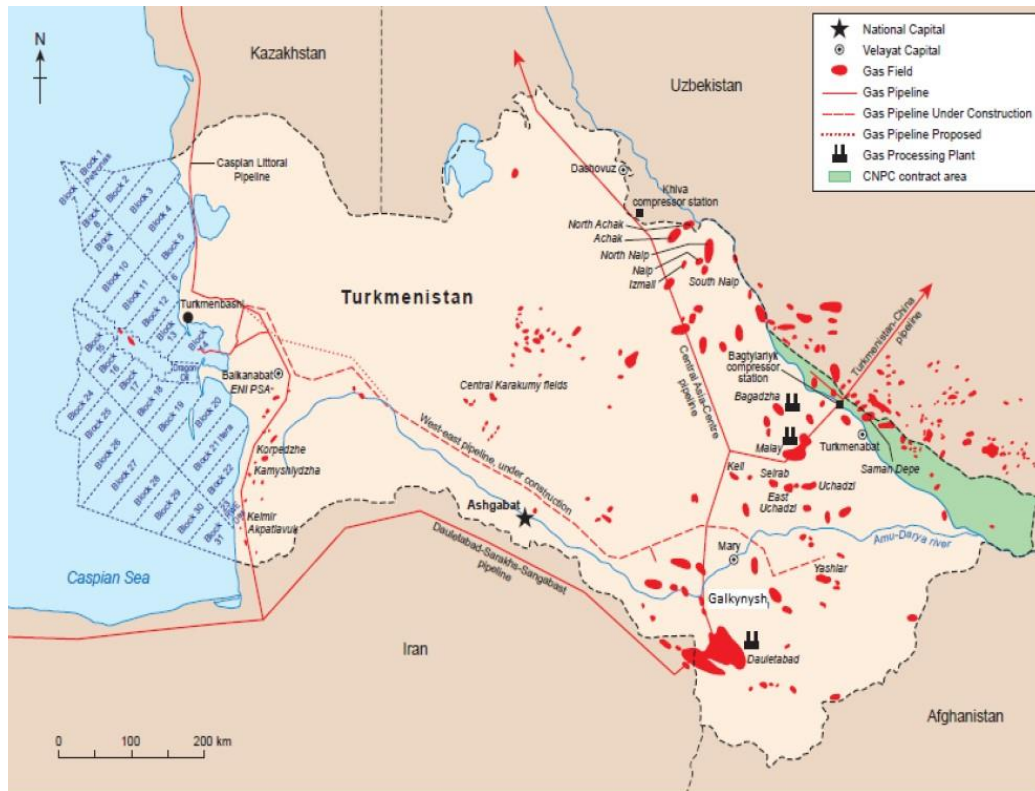


Figure 2 shows the trade balance of Turkmenistan since 2003. Especially after a period when revenues from gas exports to Russia increased, there was a decrease in 2009-2010. However, the start of export trade to China and high oil and gas prices resulted in a renewed increase in export revenues that reached record levels in 2012-2014. There was a sharp decline after 2014, with export revenues in 2016 at the lowest level in a decade, followed by a renewed increase (IMF, 2019) (OE, 2020).

Figure 2. Turkmenistan's Exports and Imports Of Goods (Million Dollars 2003-2018) (IMF, 2019)

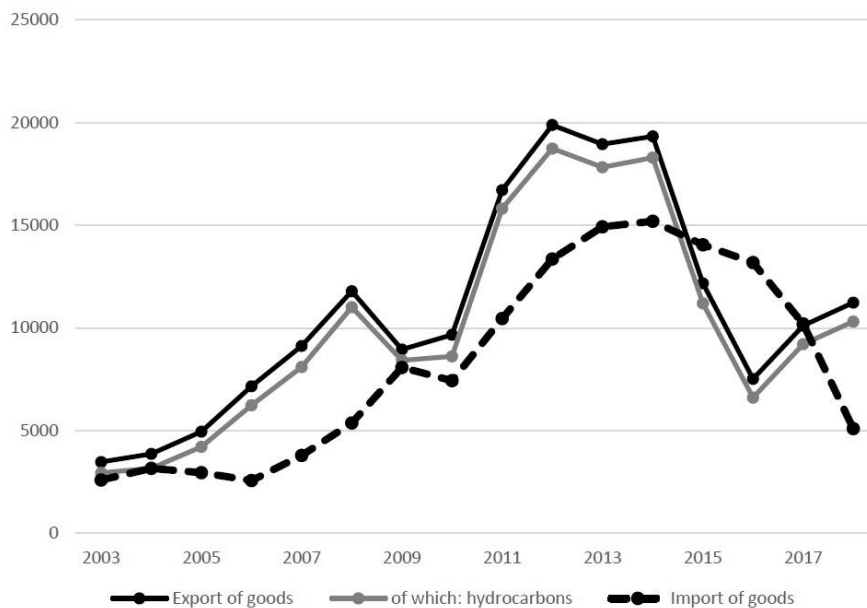


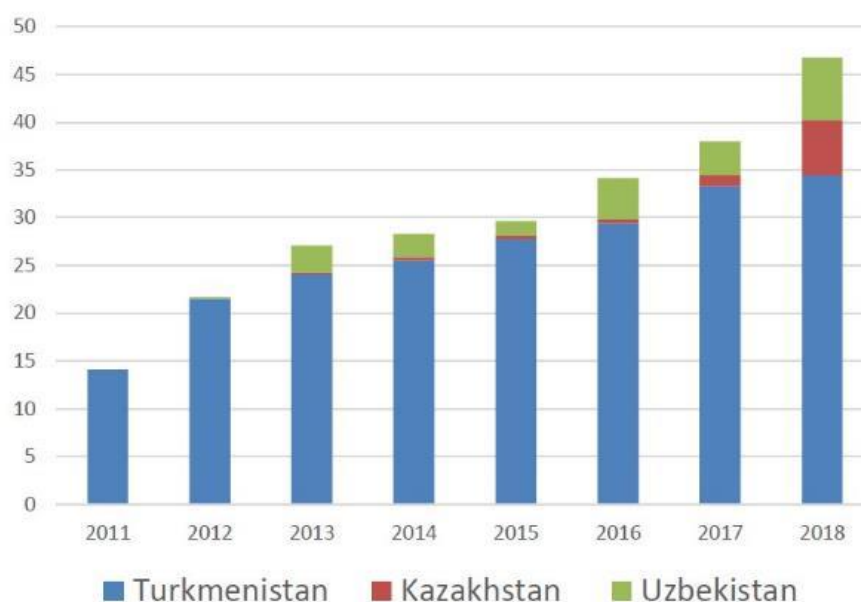
Table 2 presents the available production information by company and country of destination. In particular, it divides the production of the state-owned Turkmengaz into natural gas exported to China and gas used on other export routes (Russia, Iran, and Kazakhstan), as well as on the domestic market. In the 2010s, the Galkynysh field became the main source of exports to China. When these exports began in 2010, Galkynysh was not yet producing gas, and China directed its route to Devletabad, Turkmenistan's second-largest field, and continued to export natural gas from other quarries in the southeast of the country. Until 2014, the capacity of Galkynysh was 10 billion cubic meters per year, and by 2019 it increased to 30 billion cubic meters, which is 3 times higher than its capacity.

Table 2. Turkmenistan Gas Production By Company and Destination (BP, 2020)

Bcm	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 est
Total Production (sales gas)	33.3	40.1	56.3	59.0	59.0	63.5	65.9	63.20	58.7	61.5	62
Turkmengaz and other state-owned companies											
To China, Including from Galkynysh	0	1.0	11.0	18.1	19.6	19.2	15.5	17.8	20.5	25.7	25.8
For the export routes and the domestic market	33.2	35.5	40.2	34.1	32.7	33.4	36.2	30.4	23.0	19.5	18.9
Exports to Russia	11.8	10.7	11.2	10.9	10.9	11.0	3.1	0	0	0	0
Exports to Iran	7.0	7.0	10.0	9.0	5.0	6.0	7.0	7.0	0	0	0
Exports Kazakhstan	0	0	0.3	0	0.3	1	1	1.3	1.5	1.5	1.5
For the domestic market	14.4	17.8	18.7	14.2	16.5	15.4	25.1	22.1	21.5	18.0	17.4
Private Companies											
CNPC: under PSA at Bagtyarlyk	0.1	3.6	4.6	5.5	5.5	9.1	12.5	12.8	13.0	13.0	13.2
Petronas: Offshore Caspian Block No. 1			0.58	1.28	1.23	1.75	1.69	2.22	2.16	3.33	4.15
Private companies, as % of total	0.03	8.9	9.2	11.4	11.4	17.1	21.5	23.8	25.8	26.5	28

The steady growth of gas exports from Turkmenistan, Uzbekistan, and Kazakhstan to China is shown in Figure 3. As can be understood from the figure, Turkmenistan is the largest natural gas exporter country to China in Central Asia compared to other countries (Pirani, 2012) (OE, 2020).

Figure 3. Exports Of Central Asian Gas To China. (CAGP, 2020).



4. CONCLUSION

Turkmenistan, after gaining its independence, has become a rapidly rising and developing country since 1991. It has introduced itself to the world by ranking 4th after Qatar with its underground wealth such as natural gas and oil. Considering the natural gas production, consumption, and export between 2009 and 2019, the country's economy is improving significantly with the determination of more reserves year by year, increase in production, conscious consumption, and new agreements in exports. In recent years, China has become the country where Turkmenistan gas is used the most, and the natural gas supplied to Russia and Iran in the last 10 years has gradually decreased to a zero. Many parameters such as international relations, changes in the energy policies of countries, the effect of the geography where energy is used are main contributors.

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