

## **FUEL INDUSTRY DEVELOPMENT IN UZBEKISTAN**

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### **Abstract**

*This article analyzes the role of the fuel industry in Uzbekistan, with essence of its development over the years of independence. From methodological point of view, article diffused qualitative analyses while using quantity-based database. Empirical results highlighted analytical points in order to make better industrial developments at all. Based on these results, for the sustainable development of the fuel industry in Uzbekistan; the study recommends – a step-by-step implementation of technological recycling of rich fuel resources, taking into account domestic capacity and resources; - a increase of volume, quality and quality of production replacing high value imported goods; - focus mainly on the dried up Ustyurt and Aral Sea ports and the production of local raw materials based on the finished cycle; - and, the volume of production in the oil and gas-chemical industry should be increased 3.2 times using the existing raw resources.*

*Keywords: Industrial complex, fuel industry, fuel independence, oil refining industry, natural gas processing, coal industry*

### **INTRODUCTION**

Every republic that has gained political independence must, above all, have economic independence. Economic independence is primarily due to the acquisition of grain (grain), road and fuel independence. One of these important tasks is to ensure fuel independence. For this

reason, from the first years of independence, priority was given to oil and gas production (Ahmedov et al., 2007; A. Akimov & Dollery, 2009).

Oil and gas production in the republic has increased after the fight for the independence of the "fuel". Especially, oil production has increased in oil production. The import of major oil and energy resources from abroad, mainly from the CIS countries, has been halted. New and promising oil and gas fields have been discovered and put into operation. The launch of the Kokdumalak oil and Shurtan natural gas deposits had a great impact on the development of the economy of the republic (A. V. Akimov & Dollery, 2006; Valipour et al., 2015).

In 2015, the volume of investments into the fixed capital through the sources of financing from the fuel industry will amount to 9016.7 billion soums. This means 52.9 percent of total investment in the total industry. At the same time, foreign investments are being attracted to this sector.

A number of foreign countries are actively involved in exploration of hydrocarbon resources of Uzbekistan, prospecting and commissioning of new promising deposits, processing oil and gas and petrochemical industry. Gazprom and Lukoil (Russia) have signed a Memorandum of Understanding, signed between Texas, USA, Mitsui and Marubeni (Japan), Sasol (JAR), Petronas (Malaysia), Lotte, SK, LG International (Korea), Korean National Oil and Gas Corporation, China National Oil Corporation and others. (McKinley & Karwowski, 2015; Rosenberg & Saavalainen, 1998)

The fuel industry plays a major role in the daily life of all sectors of the economy (industry, agriculture, transport) and the population. Industrial network, engaged in mining and processing of various types of fuel and energy, is called fuel industry.

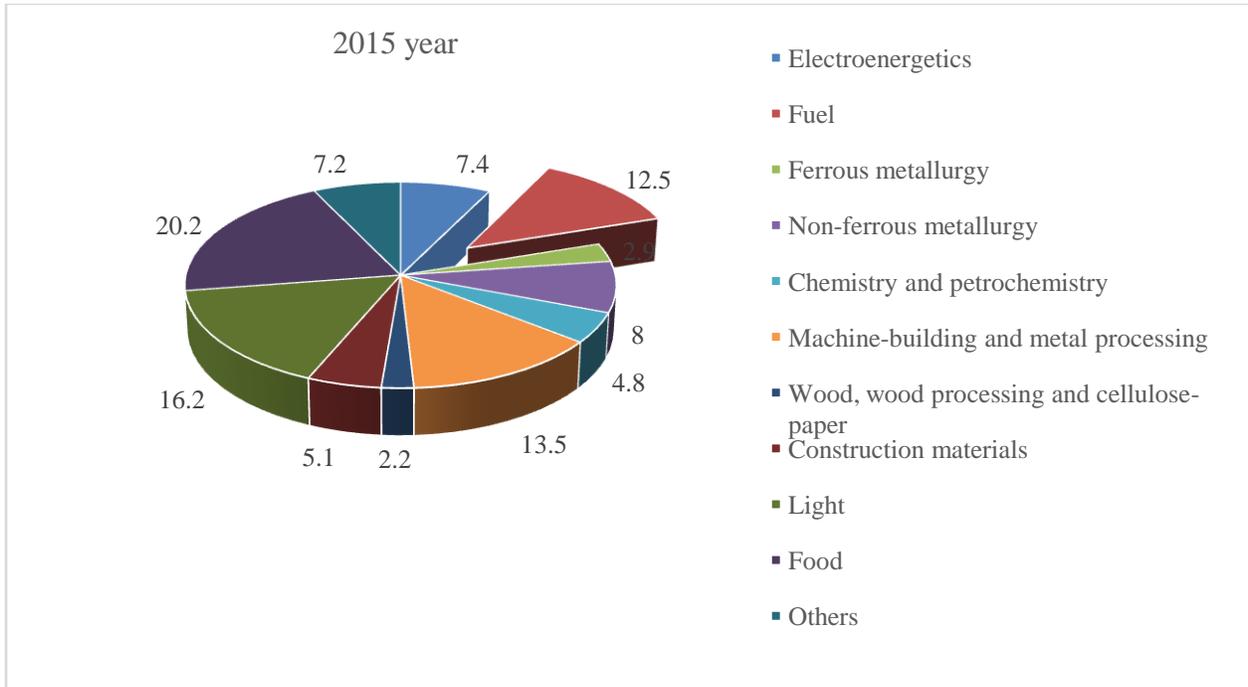
Fuel is the main source of energy and the most important raw material, as a whole. Processing of fuel resources is the basis of formation of industrial complexes, industrial nodes and industrial zones. The greater the scale of the fuel resources and the higher the technical and economic indices, the stronger the impact on the location and development of production forces. This network involves the production lines requiring cheap fuel and determines the specialization of its regions at a certain level.

## **THEORETICAL BACKGROUND**

There are five oil and gas producing regions in the country (Ferghana, Surkhandarya, Bukhara-Gazli, South-West Gissar and Ustyurt). About 160 oil and gas deposits have been opened in the country, actually 115 of them are located in Bukhara-Khiva, 27 in Fergana, 10 in Surkhandarya and 7 in the Ustyurt Oil and Gas Region. More than 50 oil and gas fields are to be commissioned in the near future.

The share of the fuel industry in the industry of Uzbekistan in 2015 was 12.5%. Foodstuffs (20.2%), light (16.2%), and machinery and metal processing (13.5%) occupy the fourth place in the industry after this indicator.

Figure 1. Structure of industrial production and share of fuel industry in percentages



The fuel industry in Uzbekistan is one of the most important sectors of heavy industry. Oil and gas extraction has a major impact on the developmental forces, first of all, on the development of the industry and its regional presence. Uzbekistan is one of the world's largest hydrocarbon reserves. Reserves worth 2 trln. About 2 billion cubic meters of coal reserves t. more than Oil and gas reserves are estimated to exceed \$ 1 trillion. Natural gas reserves in the country are estimated at more than 35 years and oil for more than 30 years.

The first oil in Uzbekistan was discovered in the Fergana region in 1880 and the industrial production started in 1904. At that time an oil refinery was built at the Altyaryk (former Vannovsk) railway station. By the 1960s oil and natural gas were extracted mainly from South Olamushuk, Polvontash, Hojobod, Andijan, Chartak, North Sok, Chimgan deposits in the Ferghana region. In addition, Uchkyzil, Hovdog, and Kokayga deposits in Surkhandarya region were also mastered. As a result, oil extraction has dramatically increased. In 1959, more than 1460 thousand tons of oil was extracted.

In the 1960s, oil and natural gas extraction moved to Bukhara-Khiva. Because of the huge reserves of fuel in this region, they are rapidly being extracted. As a result, Uzbekistan

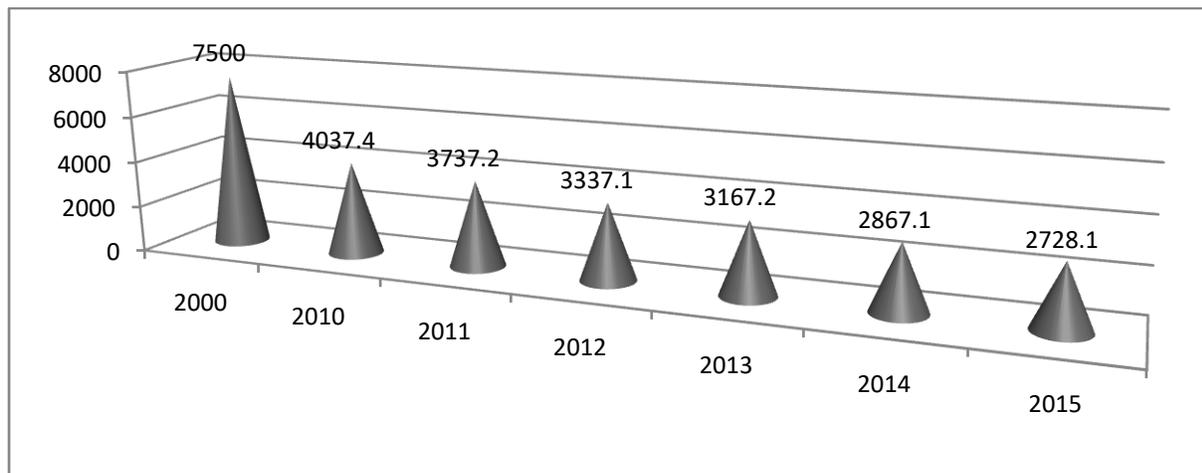
became the main natural gas producer of the former Soviet Union. Large quantities of transmitted gas and long distances have led to the thickness and construction of pipes. Gas-Ural, Central Asia-Center, and 1420 mm diameter gas pipelines.

In recent years, the share of Kashkadarya region in hydrocarbonic raw materials has increased. There are promising deposits such as Jarkuk, Shurtan, Uchkyr, Adamtash, Pachkamar, Mubarek, Oqjar, Saritosh, Karaulbazar, which are the largest deposits in the country.

In 2015, the fuel industry produced goods worth 12,154.3 billion soums. Compared with the previous year (6845.7 billion soums), the growth was achieved to 177.5 percent or to 5308.6 billion soums. The role of industry in the employment of the population is also high. The number of employees is increasing. For example, in 2010, 33.3 thousand people were employed, in 2015 their number increased to 50.6 thousand people or by 17.3 thousand people during the same period.

Oil production has grown almost three times during 1990-2015, and gas production has grown by 1.4 times. If in 2010 4037.4 thousand tons of oil was extracted, in 2015 this amount slightly decreased to 2728.1 thousand tons. It should be noted that the level of extraction of oil reserves is only 32%. In the future, the extraction of hydrocarbon resources will increase further due to infrastructure development.

Figure 2. The account of oil production, thousand tonnes



Oil refineries in the Republic are located in the Fergana region. They are Ferghana and Altyaryk oil refineries. These plants were reprocessing oil extracted in the Ferghana region. Later on, oil extraction in Bukhara-Khiva and Kashkadarya regions began to be processed. Crude oil was mainly transported by wagons, resulting in lower oil prices.

During the years of independence, the oil refining industry has undergone serious changes. In particular, the repair works at the Ferghana Oil Refinery have been completed by the Japanese firm Mitsui (Akmal, 2016; Muminova, 2014).

During the years of independence, the oil refinery, built in the town of Koruulbozor, based on the raw material of the Kokdumalak plant, was built in partnership with Technio (France) -Marubeni (Japan). The Korogulbozor Oil Refinery started production in 1997. This plant will have a capacity of 2.5 million tons per year. processing of condensate, production of gasoline, aviation kerosene, diesel fuel, sulfur and liquefied gas. As a result, the number of oil refineries increased to three and their capacity was fully processed in the country. The country's oil refineries are capable of processing up to 11m tonnes of oil a year. The distinctive feature of the gas industry is that it should be delivered immediately to consumers, in contrast to solid (coal) or liquid fuel (oil). That's why a whole process occurs in a phase-by-phase process between gas extraction, transportation and consumers.

Uzbekistan has a developed gas industry. The gas industry is the youngest and fastest growing network in the fuel industry. It is characterized by the fact that fuel is an efficient, environmentally-friendly "clean product" and that there are huge natural gas reserves. Uzbekistan is one of the world's largest natural gas reserves and one of the world's largest producers of natural gas (Djanibekov, Hornidge, & Ul-Hassan, 2012).

It is one of the international specialized fields of natural gas production and supply. Uzbekistan is one of the world's largest producers of natural gas in the world. In the CIS it is the third after Russia and Turkmenistan.

Natural gas is extracted from the fields at Bukhara-Khiva, South-West Gissar and Ustyurt regions. They will be recycled in Mubarek Gas Processing Plant and Shurtan Gas Chemical Complex. In 2001, the total value of 1 billion USD. The Shurtan Gas Chemical Complex, worth US \$ 1 billion, has been built. Mubarek and Shurtan Neft-Gas Unitary Enterprise have installed 400,000 tons of liquefied gas and gas condensate units.

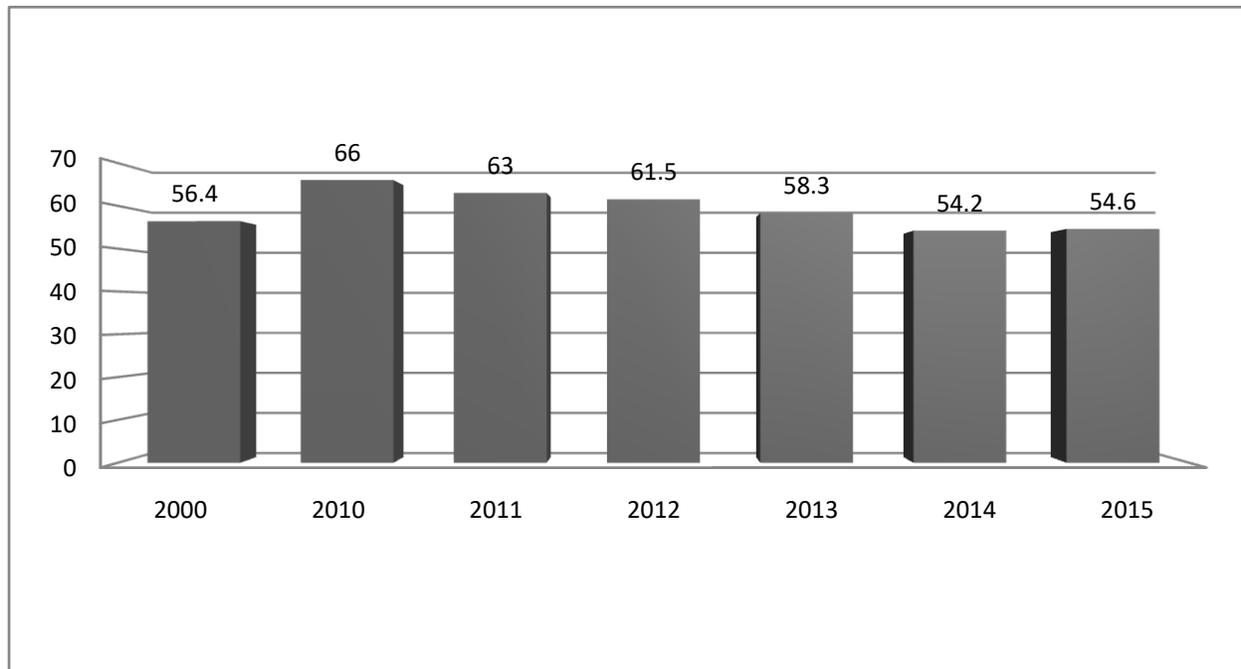
Oil and natural gas in the Fergana, Surkhandarya and Bukhara regions are largely due to their extensive production over the years. On the contrary, the share of South-West Gissar (Kashkadarya) is growing. In recent years, the position of the Ustyurt region has increased. The prospective gas fields are identified in the Ustyurt region and their extraction is intensively carried out.

In Karakalpakstan rich reserves of natural gas, a large complex of fuel and chemical industries, equipped with modern technologies, was built. Attracting foreign investment has also contributed to the targeted development. In particular, in 2015, the Republic of Korea invested more than \$ 4 billion into the Ustyurt Gas Chemical Complex built on the basis of Surgil deposit.

Hence, this complex has become a modern enterprise with the world's highest technology. The enterprise has been able to produce 83,000 tonnes of polypropylene products for import substitution. It is worth noting that this large enterprise, which has created over one thousand jobs, increases the production of polyethylene by 3.1 times.

In order to increase the production of liquefied gas at the unitary subsidiary "Mubarek Gas Processing Plant", the first line of propane-butane mixture was put into operation.

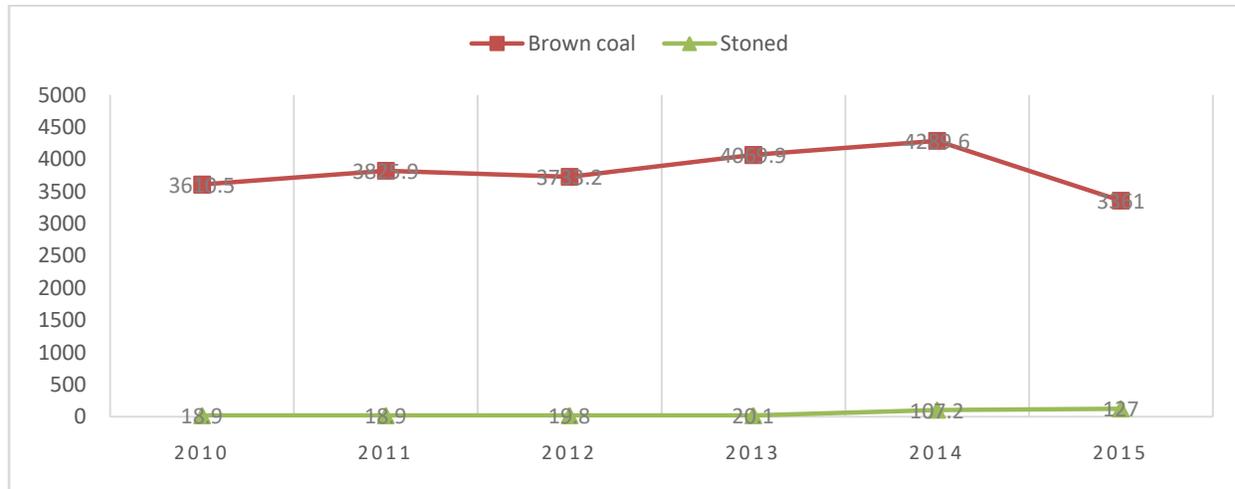
Figure 3. Natural Gas Production in Uzbekistan, billion m3 account



Uzbekistan produces 54.6 billion som in 2015 cubic meters of natural gas or 100.8 percent compared to the year of 2014 it was 836,3 thousand tones of liquefied gas, which is believed by 2.2 times more than in 2012 (382.1 thousand tons). Although natural gas production rates have increased slightly in recent years, the decline in the year 2000 (2000) is noticeable. For example, in 2000, 56.4 billion cubic meters of gas were extracted. There are three big coal deposits in Uzbekistan. These are Angren (brown coal), Shargun and Baysun (both coal deposits). Although the Angren coal is a brown coal, but the size of the reserve is high (96.5% of the republic's coal reserves).

Moreover, coal is extracted in open way, and close proximity to large consumers increases its economic value. Baysun and Shargun deposits are extracted at altitudes of 600-800 m above sea level and transported through the bucket buckets to the station. Coal layer is thin, ie up to 12 m. They slightly reduce its value (Figure 4).

Figure 4. Tendencies of various resources



Coal industry ensures stable growth from year to year. If in 2000 2.5 million tons of coal was extracted, this figure will be about 3.5 million cubic meters in 2015. t. in the first half of the year. 96.4% or 3361.0 thousand tons of coal (3488.0 thousand tons) brown coal, the remaining 3.6 percent or 127.0 thousand tons of coal fires. Although the share of coal in brown coal is relatively small, but its extraction has increased almost six times during the period under review. The main consumer of fuel resources is the power industry. But its share is decreasing. In particular, this sector consumed 62.8% of the total fuel in 2010, which is less than 55.0% by 2015. There is also a lot of fuel in the chemical and petrochemical, construction materials and metallurgy industries. Thus, 27.7% of the total spent fuel was produced in the chemical and petrochemical industry (27.4% in 2010), 25.6% in construction materials (22.5% in 2010) and 17.8% in metallurgy (18.9% in 2010).

## CONCLUSION

Every republic that has gained political independence must, above all, have economic independence. Economic independence is primarily due to the acquisition of grain (grain), road and fuel independence. One of these important tasks is to ensure fuel independence. For this reason, from the first years of independence, priority was given to oil and gas production. Thus, for the sustainable development of the fuel industry in Uzbekistan:

- step-by-step implementation of technological recycling of rich fuel resources, taking into account domestic capacity and resources;
- increase of volume, quality and quality of production replacing high value imported goods;
- focusing mainly on the dried up Ustyurt and Aral Sea ports and the production of local raw materials based on the finished cycle;

- The volume of production in the oil and gas-chemical industry should be increased 3.2 times using the existing raw resources.

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