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Review

The Central Asian states' role in the world mining industry

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Abstract

The growing needs of mankind for minerals predetermine a systematic increase in the scope of mining operations. However, it is known that mineral resources are not evenly distributed in the bowels of the earth; therefore, due to their production, some regions of our planet can significantly outstrip other regions in their technical and, as a result, economic development; hence, the constant need to extract more minerals in order to develop the domestic industry and to strengthen the economy. This paper is devoted to the Central Asian states, their internal structure, economic integration into the world economy, and the mining sector development as the basis of a successful model for the development of the country as a whole. The study summarizes and analyzes the political system and socio-economic conditions in the Central Asian states. It presents a brief overview of the scale of mining operations; provides information about the mining industry structure in each country and the proceeds from its sales. Taking the Central Asian states as an example, we demonstrate the importance of the mining sector as an integral part of a country's domestic economic structure.

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Introduction

Since the start of the industrial revolution in 1760, the consumption rate of mineral resources by mankind has been steadily increasing. According to the annual analytical collection of World Mining Data (Reichl and Schatz, 2021), mining operations in 2019 were carried out in 171 countries. In this year, a total of 17.9 billion tons of minerals were extracted, which is 6.6 billion tons more than at the beginning of the 21st century (Table 1). The annual increase in the production growth rates is associated with many factors, both the overall technology development (Goncharenko et al., 2019; Nguyen and Pham, 2019) and increasing demand for certain types of raw materials in order to switch over to new environmentally friendly energy sources (Arrobas et al., 2017; Church and Crawford, 2020). The systematic growth of the global mining system has been going on for more than a decade; however, this progress has not been equable in all countries, and the prospects for its development are still in question. Traditionally, more than half of all minerals are produced in the Asian region (58.9%), followed by North America (15.8%), Europe (7.1%), Oceania (7.0%), Latin America (5.7%), and the African region (5.5%) (Kirsanov et al., 2019; Reichl and Schatz, 2021).

With such a superficial look at the world production scale, it may seem that a huge amount of mineral resources is evenly concentrated throughout the Asian region, the development of which allows for a systematic expansion of the Asian countries' opportunities in terms of ensuring maximum socio-economic benefits. In fact, many Asian states still fail to launch a process of economic diversification and sustainable development based on the exports of

natural resources. In many cases, developing the natural resource base may not provide the conditions required to achieve the expected economic stability, diversification, or expanded opportunities in the social sphere (Gelb, 1988; Auty, 1993; Sachs and Warner, 1995).

Table 1. World structure of mining operations and the dynamics of their change in the period from 2000 to 2019 (Reichl and Schatz, 2021).

Mineral resources	Extraction volume, mln tons		Dynamics of change in 2000/2019, %
	2000	2019	
Mineral fuels	627.28	1587.91	153.1
Iron and ferro-alloy metals	50.00	102.59	105.2
Non-ferrous metals	0.02	0.03	49.9
Precious metals	539.02	797.14	47.9
Industrial minerals	10,074.68	15,435.80	53.2
Total	11,290.99	17,923.47	58.7

Thus, China has a huge impact on the statistical preponderance of the Asian region: the country has the status of a developing economy and is the world leader in the extraction of 32 different minerals (4 Iron and Ferro-Alloy Metals, 14 Non-Ferrous Metals, 1 Precious Metal, 11 Industrial Minerals, 2 Mineral Fuels), whereas in Cambodia, whose area is more than 50 times smaller than that of China, and where there was a civil war for 30 years, the production volumes are not so great for objective reasons, and the country is more agrarian than an industrial giant, which, in turn, determines the corresponding living standards and the population's incomes.

As for the global situation in the mineral market, since 2000, the production has increased by 58.74%; at the same time, more than half of all extracted raw materials (58.83%) come from 5 leading countries: China, USA, Russian Federation, Australia, and India, whose sales revenue also significantly exceeds other countries' indicators (Figure 1).

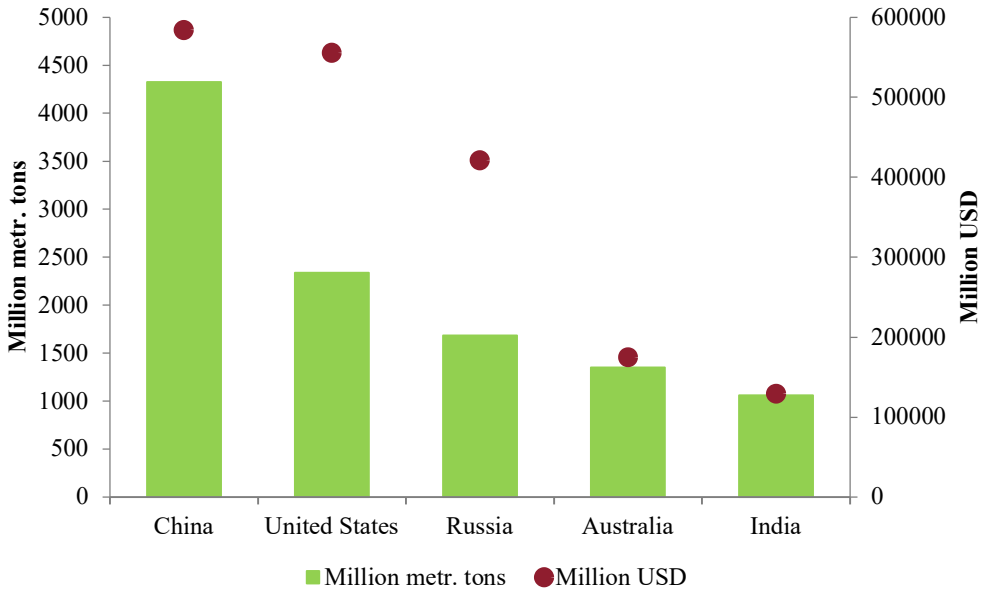

Figure 1. Total industrial minerals production by leading countries and their value in million USD in 2019.

Therefore, contrary to expectations related to the natural resources export model, we observe a steady lag in the economic performance of countries with rich natural resources, as compared to the economic activity indicators in countries that have no domestic natural resource base.

This study is the first in a series of papers devoted to the mining structure in the Asian region countries, focusing on the Central Asian states that include Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

Political, Geographical, and Socio-Economic Development Conditions in the Central Asian States

Geographic location

Central Asia occupies a rather vast (4 million sq. km) area of Eurasia with no direct access to the ocean, which has been formed as a result of the collapse of the Soviet Union.

According to UNESCO, this region includes Afghanistan, Uzbekistan, Tajikistan, Turkmenistan, Kyrgyzstan, Kazakhstan, regions of Asian Russia, Mongolia, northwest China, northern regions of India and Pakistan, and northeastern Iran; whereas according to Britannica (the oldest American universal encyclopedia), this region includes only five republics of Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) (Blinichkina, 2010; Zhou and Ghiasy, 2018; Morozov, 2020; Plotnikov, 2020; Zhiltsov, 2020; Britannica, 2021; Khalid, 2021).

On the one hand, the region has an excellent geographical location: it connects Europe and the Asia-Pacific region (Figure 2). Nearby are such progressive states as China and the Russian Federation, the neighborhood of and cooperation with which can have a positive effect on the economic development and the living standards of the population as a whole (Kazantsev et al., 2021; Stronski and Ng, 2018; Cohen, 2019). On the other hand, the infrastructure and industrial development of Central Asian states does not fully meet the interests of their more developed neighbors.

Social and economic conditions

Since gaining independence after the collapse of the Soviet Union in 1991, the countries under consideration have followed different strategies of economic and political development, which, in some cases, helped them achieve significant positive results in terms of improving the living standards of their people (Pomfret, 2014; Haerpfer and Kizilova, 2020).

The economic activity in Central Asian states is mostly concentrated in the agricultural sector in the south (Hamidov et al., 2016), as well as in the heavy, light, and mining industries in Kazakhstan. Under the Soviet rule, this region supplied most of the USSR cotton and was the main supplier of coal and other minerals for industrial use.

Figure 2 shows a map of Central Asian states with main macroeconomic indicators for 2019.

Figure 2. Geographic and economic parameters of the Central Asian states. (Khoema, 2021; TheGlobalEconomy.com 2021; World Bank, 2021).

The infographic analysis (Figure 2) suggests that 45.5% of the population in the Central Asian region under consideration is concentrated in Uzbekistan. Kazakhstan is the only country in this region that

demonstrates positive migration rates, and its GDP per capita is virtually equal to the aggregate indicator of other countries. Tajikistan has difficult geographic conditions since more than 90% of its territory is located in highlands; in addition, Tajikistan has the lowest GDP per capita. The GDP amount under the first president of Turkmenistan – Saparmurat Niyazov – for 16 years of his governance (10.02.1990 – 12.21.2006) grew by 150%; whereas before 2000, the country's GDP was rather decreasing. Since the start of the governance of Gurbanguly Berdimuhamedov (from 12.21.2006 to the present day), the GDP has increased by 250%, and at the end of 2019, it was USD 40.7 billion. The Kyrgyzstan's GDP in 2019 reached its maximum of USD 8.45 billion; the minimum GDP was recorded in 1999 (USD 1.25 billion).

In recent years, the Central Asian states have shown fairly high rates of economic growth (their growth in 2021 amounted to +5.2%). The gross domestic product per capita in Kazakhstan, Turkmenistan, and Uzbekistan is higher than the average of the least developed countries (Figure 3).

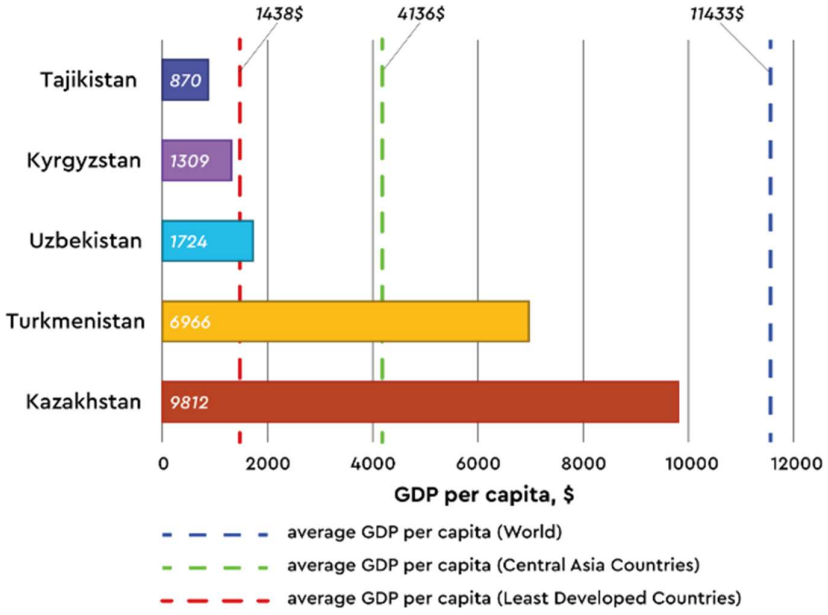

Figure 3. GDP per capita figures.

Currently, the total GDP in the Central Asian states is a modest share of 0.236% of the global amount. With a share of the world's population of about 1%, their economy is lagging behind by about 3 times in terms of GDP.

According to the analysis by Expert RA agency (Expert RA, 2021), the export-oriented economy of Kazakhstan is the most developed in the region. The main export commodities are oil and metals. Uzbekistan is the second largest economy in the region, whose public investment has provided an increased investment activity. The Kyrgyz Republic is one of the poorest countries in the region. The backbone of the economy is gold mining; the change dynamics entails changes in the growth rates, as well as the investment activity dynamics. The poorest republic of Central Asia – Tajikistan – has the highest rate of economic growth (about 6 to 7% annually). A significant part of the economy is agriculture and forestry, as well as the cotton, metallurgical, and mining sectors. It is rather difficult to study the economic situation in Turkmenistan as the most closed country in the region.

Kazakhstan has the lowest inflation rate: 7.2%, followed by Tajikistan (8.48%), Turkmenistan (10.0%), Uzbekistan, and Kyrgyzstan (both 10.9%) (Take-profit.org, 2021).

As stated above, over the past 30 years, the economic growth rates in Central Asia have been higher than in many other countries. Thus, in Tajikistan, the poorest country in the region, the poverty level has decreased by almost 40%; however, the GDP structure in all countries still depends mainly on the exports of mineral raw materials or labor force.

Despite a strong migration outflow in the form of labor force to neighboring countries, the region's population has grown by 43.36% since the collapse of the Soviet Union, or more by than 22 million people (Demoscope Weekly 2021a). Against the background of a young population structure (the average age ranges from 22 in Tajikistan to 31 in Kazakhstan) (Demoscope Weekly, 2021b), it is obvious that this growth will continue.

In this regard, the problem of employment is becoming urgent. According to the latest data (Take-profit.org 2021), the highest unemployment rate is

recorded in Uzbekistan (6.9%), followed by Kazakhstan (4.9%), Turkmenistan (3.9%), Kyrgyzstan (3.1%), and Tajikistan (2.1%), the absolute figures being about 15.5 million people, only according to official statistics. The real figures can be much higher.

Political stability of the region

Among other things, the Central Asian states are characterized by rather high risks in terms of political stability (Figure 4), as well as terrorist threats due to the infiltration of militants from Syria into the region after they were defeated by government forces with the support of the Russian Federation, Iran, and Turkey (Malet, 2010; Dundich 2012; International Crisis Group, 2015; Lynch et al., 2016; Patnaik, 2016; Morozov, 2020; Sakiev, 2020). The combination of these and many other factors hinder the stable development of this region.

In 2019, there was a smooth change of governance in Kazakhstan after the resignation of its long-term President Nursultan Nazarbayev (years of governance: 1991 to 2019), which laid the basis for a wide political stability and policy continuity in the coming years (Mokhammad, 2019; MarshMcLennan, 2020).

Being a follower of N.A. Nazarbaev, the new president – Kasym-Zhomart Tokayev – will remain the advocate of the partial program of the country's economic diversification through increasing the competitiveness of the oil and gas sectors, including by means of reforms in the finances and investment policy.

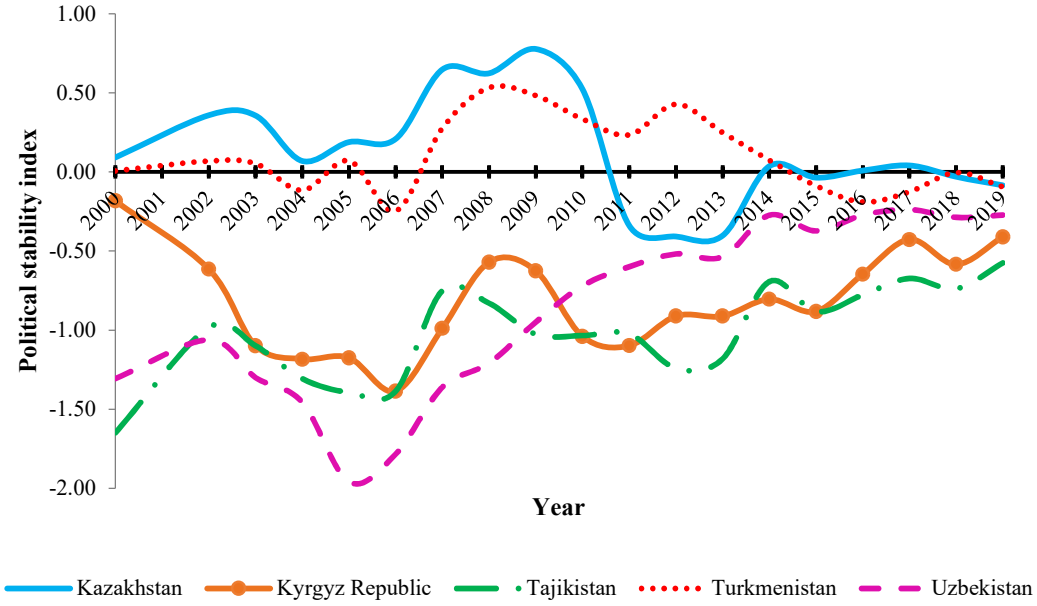

Figure 4. Political stability index in Central Asian states from 2000 to 2019 (Khoema, 2021; TheGlobalEconomy.com, 2021; World Bank, 2021).

Meanwhile, the failure to implement high economic ambitions arising from Kazakhstan's key position in China's Eurasian Transport Corridor "Belt and Road Initiative" (Bagitzhanova et al., 2018; Li, 2018; Zhou and Ghiasy, 2018) can lead to increased dissatisfaction with the regime. Longer-term risks are associated with Kazakhstan's involvement in increased geopolitical competition in Central Asia between Russia, China, the USA, and the EU. The best value of the political stability index in the country was recorded in 2009 (0.78), the worst one, in 2012 (-0.41).

Long-term risks in the Kyrgyz Republic are associated with high levels of corruption, the economic dependence on Russia and China, a clear division of the country into north and south, as well as potential border and water disputes with neighboring countries (MarshMcLennan, 2020). Since 2006, the political stability index in this country has been steadily growing and reached its best indicator in 2019 (-0.41).

The Tajikistan's political outlook remains fragile as the country slowly moves towards a transfer of governance from President Emomali Rahmon to his son, as expected over the next decade. The Russian support and military presence in Tajikistan (Gleason, 2001; Szálkai, 2020), as well as the latter's closer ties with neighboring China, reduce the likelihood of defeat in a civil war, but a widespread discontent can lead to outbreaks of protests and civil unrest. Similarly, the instability in neighboring Afghanistan and the return of Islamist militants from Iraq and Syria jeopardize Tajikistan's internal stability (Lemon, 2015; Kim, 2016; MarshMcLennan, 2020).

Turkmenistan remains a highly isolated state, and the likelihood of civil unrest is reduced there due

to the authoritarian governance and very limited media and economic freedoms. This stability has been preserved despite the reports that Turkmenistan was facing an internal economic crisis in 2019. Meanwhile, as is the case with other Central Asian states, the government is concerned about Islamist militants in the region and will continue to strengthen its ties with China to raise funding and improve its economic outlook (Bohr, 2016; MarshMcLennan, 2020).

Previously, World Bank experts were sceptical about the political stability in Uzbekistan, and in the middle of the last decade, the political stability index decreased to its minimum (-1.96). This fact may be due to a series of explosions and attacks on police posts in Tashkent, Bukhara and several other cities in 2004, as well as the riots in Andijan in May 2005 (Committee to Protect Journalists, 2005; Freedom House, 2008). By the beginning of the new decade, the political stability index in Uzbekistan had increased and reached the same level as in Kyrgyzstan and Tajikistan, but remained 2 to 2.5 times lower than the corresponding indices in Kazakhstan and Turkmenistan (Fedorov, 2012). At the end of 2019, this index was -0.41, which is the best indicator in the entire history of the country.

Persistent risks in the country stem from the country's growing external debt, inter-factional conflicts among the ruling elite, a potential rise in Islamist militancy from neighboring Afghanistan, disputes over water resources, as well as border-related and ethnic disputes in Central Asia (MarshMcLennan, 2020).

Structure of the Mining Industry in Central Asian States

According to various experts' estimates, the share of the mining sector in the industrial production of individual countries in the region varies from 10 to 60%. This is due to an uneven distribution of resources throughout the region, where Kazakhstan is the undisputed leader in terms of reserves and, accordingly, extraction of various mineral raw materials. Below we present basic information about the mining industry structure in each of the Central Asian states.

Kazakhstan

The republic possesses significant mineral deposits and energy resources, which largely predetermines the Kazakhstan's economy basis: according to various estimates, the mining sector provides 30 to 60% of the country's GDP. However, due to the predominant share of the mining sector in the economic structure, the country is sensitive to fluctuations in commodity prices. The structure of mining in Kazakhstan with the dynamics of change over the past 5 years is shown in Figure 5.

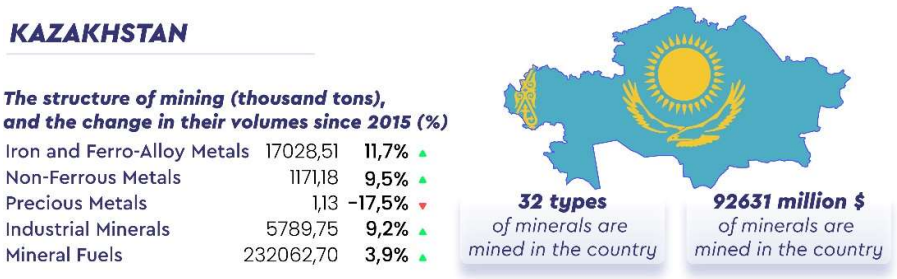

Figure 5. Structure of mining in Kazakhstan.

Kazakhstan is one of the leaders in the extraction of many non-metallic minerals and provides 75% of the production of the entire Asian group of countries with transition economies. The number of exploration projects in the country indicates the huge potential for a future increase in mineral extraction (U.S. Geological Survey, and U.S. Department of the Interior, 2019a).

In 2019, the country rounded out the top ten countries in terms of gold and silver production, traditionally holding first place in uranium production (41.75% of the global production) (Reichl and Schatz, 2021). As commodity prices rise, it seeks to attract foreign investment to expand the current production.

The Kazakhstan's mining industry is mainly represented by several large foreign and state-owned companies engaged in the extraction of non-fuel minerals. The presence in the region of such large foreign mining companies as Glencore, Rio Tinto, Iluka Resources, Central Asia Metals Plc, Areva Sa, ArcelorMittal, Russian Copper Company, and United Company Rusal (Australian Trade and Investment Commission, 2021) is evidence of the clear attractiveness and development potential of the national mining industry. This fact ensures the inflow of large foreign investments (over 75% of foreign investment goes to the mining sector), which has a positive effect on the domestic economy of this state.

Kyrgyz Republic

The Kyrgyz Republic ranks second in the region in terms of the number of its mineral deposits. The country has significant deposits of coal, non-ferrous, and rare earth metals. These natural resources are

scattered virtually throughout the country in various concentrations. However, according to international experts, with a relatively small area and good geological knowledge, the Kyrgyzstan's mineral potential is still poorly used. The mining structure in the Kyrgyz Republic with the dynamics of change over the past 5 years is shown in Figure 6. Despite a significant economic downturn in the 1990s, Kyrgyzstan has retained a well-equipped production base for the extraction and processing of minerals. According to official figures, the republic has today state-owned deposits of gold (proven reserves of 430 thousand tons), tin (208 thousand tons), tungsten (144 thousand tons), rare earth metals (51 thousand tons), aluminum (349 million tons), coal (over 1 billion tons), antimony (157.5 thousand tons), mercury (40 thousand tons), molybdenum (2,358 tons), and many other minerals (Beyond Investment Group, 2021).

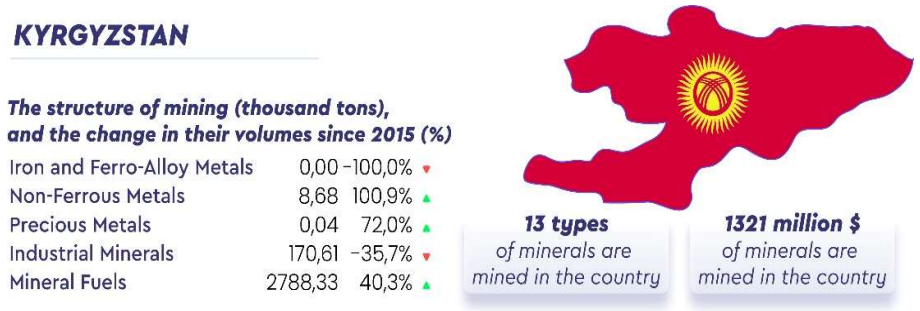

Figure 6. Structure of mining in the Kyrgyz Republic.

Over the past 5 years, the extraction at copper deposits have increased (by 178%), their total mineral resources being about 8 million tons. The average copper content in the ore is 0.2 to 1.0%. The largest deposits in terms of reserves are Kutu-Tegerek (1.02 million tons, content: 0.6%), Taldybulak (0.75 million tons, content: 0.2%), and Oital (0.6 million tons, content: 0.17%). The exploration of these deposits is low.

In Kyrgyzstan, as in Kazakhstan, the mining industry is one of the most attractive areas for foreign investors. The country is trying to improve its investment attractiveness by increasing the transparency of issuing licenses for the exploration and development of natural resources (U.S. Geological Survey and U.S. Department of the Interior, 2021). To date, the largest investor in the Kyrgyzstan' mining industry is Canada with a 48% investment in the Kumtor Gold company, which is developing the largest gold deposit in Central Asia. The macroeconomic impact of this project could be hardly overestimated, as it accounts for about 10% of the country's GDP. Despite the increased interest among potential investors from developed countries, there is still no real development of the national mining industry due to the problems accumulated over previous years. They include both staffing problems and problems associated with the transparency of the licensing system for deposit development. The main risk is the local population's aggression against mining companies, which results in the infrastructure destruction and the damage to the company's personnel (Trilling, 2013; Reuters, 2020; Shaku, 2020).

Tajikistan

Tajikistan has explored deposits of non-ferrous and rare metals (mercury, antimony, lead, gold, silver, etc.). It is worth noting the presence of placers of precious and semiprecious stones (ruby, garnet, lapis lazuli, turquoise, amethyst, agate, onyx, etc.). However, the bulk of the country's remaining natural resources is concentrated in the central and, less often, western highland regions. The structure of mining in Tajikistan with the dynamics of change over the past 5 years is shown in Figure 7.

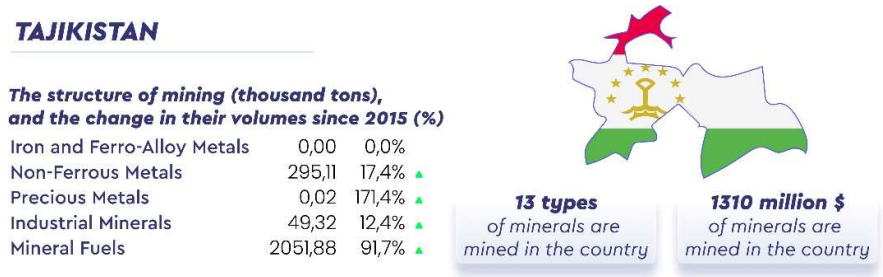

Figure 7. Structure of mining in Tajikistan.

Over the past thirty years, the country's mining industry has undergone a noticeable decline due to the civil war (1992–1997) followed by a social and economic crisis (Ahmed, 1994; Tunçer-Kilavuz, 2011). However, since the early 2000s, there has been a slight growth in the mining and processing industries. One of the most important development lines is mining of coal, most of which is produced at the Shurab deposit in the north of the country. The production of non-ferrous metals, mainly copper, gold, and silver, is beginning to recover rapidly (in the last 5 years only, its growth rates has amounted to 511%, 92% and 317%, respectively). The main gold mines are located in the west and center of the country.

Tajikistan puts high hopes for foreign investment and mining infrastructure development (U.S. Geological Survey and U.S. Department of the Interior, 2020).

Turkmenistan

The current and future economy of Turkmenistan is highly dependent on the exports of crude oil and natural gas; therefore, the priority for the country is to find new routes for their sales. However, some signs of a focus on the non-hydrocarbon sector are Turkmenistan's investments in production factories for chemicals and building materials, the modernization of existing bromine and iodine production plants, the construction of potassium processing plants, etc. The investment is likely to increase the production of these minerals over the next few years (International Monetary Fund 2017; U.S. Geological Survey and U.S. Department of the Interior, 2019b). The structure of mining in Turkmenistan with the dynamics of change over the past 5 years is shown in Figure 8.

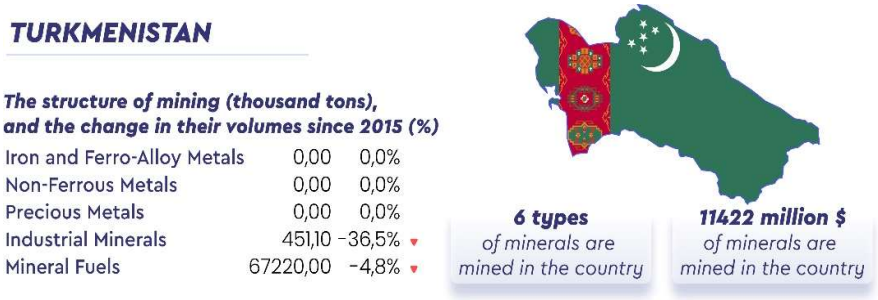

Figure 8. Structure of mining in Turkmenistan

Turkmenistan ranks 6th in the world in terms of natural gas reserves (NoNews, 2018b) and 43rd in terms of oil reserves (NoNews, 2018a). Given this fact, the main industries are the extraction, processing, and exports of these natural resources.

In mid-2017, the Garlyk mining and processing plant for the processing of potash salts was launched. It is designed for a production capacity of 7.8 million tons of ore per year, which should fully meet the domestic needs of Turkmenistan's agriculture with potash fertilizers.

Uzbekistan

Although the mining industry accounts for a relatively low share in its industrial production, Uzbekistan has a fairly large raw material base of non-ferrous and rare metals, most of which are confined to the mountain ranges in the central and eastern regions. Currently, there are 2,028 state-owned mineral deposits in the Republic of Uzbekistan; their production structure and dynamics of change over the past 5 years are shown in Figure 9.

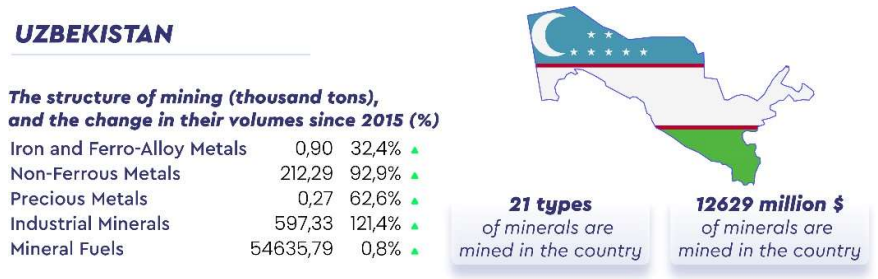

Figure 9. Structure of mining in Uzbekistan.

In the past few years, Uzbekistan has stepped up its efforts to develop the national industry, the share of which in the country's GDP is about 30%. In general, as seen in Figure 8, the overall development dynamics of the country's mining sector shows steady growth. The extraction of mineral raw materials in the country

has grown by 62% over the past 5 years. Thus, Uzbekistan is among the 30 leading countries in terms of production of phosphates, lignite, copper, lead, and zinc; the top 20 countries in terms of production of potash, kaolin, selenium, cadmium, tungsten, molybdenum, gold, and silver; and the top 10 countries in terms of production of uranium, palladium, tellurium, and rhenium (Reichl and Schatz, 2021).

According to available data, Uzbekistan ranks 19th in the world in terms of natural gas reserves (NoNews 2018b) and 16th in terms of its production (Reichl and Schatz, 2021). At the same time, the country's government aims to increase the share of gas exports, which are planned to be increased by reducing the domestic consumption. The largest corporations in the Uzbekistan's energy sector are CNPC (China National Petroleum Corporation), KNOC (Korea), Gazprom (Russia), LUKOIL (Russia), and Uzbekneftegaz (Uzbekistan).

At the moment, 264 oil and gas fields have been discovered in the country, the reserves of which, according to various scientific reports and expert assessments, will be enough for 20 to 30 years at current production rates (Butenko, 2019; Kholikov, 2019; BP, 2020; Center for Economic Research, 2021). One of the largest copper producers in the Central Asian region – Almatyk Mining-and-Metallurgical Integrated Works, JSC – is based in Uzbekistan, which also accounts for about 90% of silver and 20% of gold produced in the country. The company is developing copper-and-molybdenum, lead-and-zinc, copper-and-porphyry, and barite ores in Tashkent and Jizak regions (Kholikov, 2019).

At the moment, 25 gold deposits are being developed in the country (a total of 81 deposits are state-owned), with the main facilities concentrated by two companies: the Navoi and Almalyk mining-and-metallurgical integrated works. At the current extraction rate, the country's gold reserves will last for more than 50 years. The country's largest and most famous gold mining enterprise is the Muruntau open-pit mine.

In terms of uranium reserves, Uzbekistan ranks 7th in the world (5th in terms of production); 40 deposits are under development, and the increase in production over the past 5 years has been 8.4%. As for the general development of the nuclear industry, an agreement was signed with the Russian Rosatom State Atomic Energy Corporation in 2018 for the construction of the first nuclear power plant in Central Asia in 2028 to include two power-generating units with a total capacity of 2,400 GW/hour (Ilkhamov 2019; Glavgosexpertiza of Russia, 2021).

The Uzbekistan's mining sector attractiveness for foreign investors is due to several factors (Butenko 2019; Kholikov 2019; Postanovlenie Prezidenta Respubliki Uzbekistan N pp-4401 2019):

- the existence of a large amount of natural resources in the country, the development of which will help increase the capacity of existing enterprises or create favorable conditions for the construction of new industrial facilities;
- the country's mining sector is represented by many mining, processing, and metallurgical enterprises, most of which have survived from Soviet times;
- most of the deposits can be mined in an open pit, which will significantly reduce the capital costs at the early mine construction stages;
- under the state program for the development and recovery of the mineral resource base for 2020–2021, it is planned to arrange internships for geological specialists in foreign training centers and education of gifted young professionals in higher educational institutions, which will significantly improve the quality of personnel employed in production;
- the governmental support for the mining industry, which ensures the openness of deposits for foreign investment at the legislative level.

In 2018, covenants and agreements were reached on cooperation for the geological survey of 12 promising blocks, as well as for the development of 6 deposits, with such large mining companies as B2 Gold (Canada), Rosgeoperspektiva (Russia), Shindong Resources (South Korea), TUMAD (Turkey), NordGold (UK) (Kholikov, 2019).

Discussion

The global mining industry is characterized by unevenness due to both objective (proven mineral reserves) and subjective (social, economic, and political) reasons (Oganesyan and Mirlin, 2019; Rastyannikova, 2020).

In 2019, all types of minerals were mined in 165 countries, where the Asian region traditionally dominates in terms of production volumes, the structure of which includes Southwest, Southeast, Central, South, and East Asian countries.

To understand the importance of the Central Asian states and their role in the global structure of the mining industry, it should be noted that they account for 2.15% of the world's total production of all minerals. To assess the economic potential of the countries under consideration, we have presented in the previous section their internal social and political structure, the availability of certain mineral resources, advanced branches in industry, their attractiveness for foreign investors, etc.

It is clear that, in terms of certain economic and political freedoms, most of the Central Asian states have low scores in many parameters, as seen in Figure 10 (Heritage Foundation, 2021).

In addition, we should especially mention the weak judicial system, which scares off foreign investors and, consequently, slows down the modernization of the Central Asia's economies. In general, the business environment remains challenging

and poses a major obstacle to the diversification of the Central Asia's economies from their dependence on raw materials. As a result of the mining industry overview, we have found that virtually in all Central Asian states (except Turkmenistan), we can observe positive dynamics of production, which is + 31.23% on average in this region. However, when considering the mining sector in detail, you will clearly see the unevenness of its development in each country due to a set of socio-economic and political reasons, e.g., Kazakhstan, where a significant part of the mineral and raw materials and, importantly, industrial facilities have remained after the collapse of the Soviet Union, annually increases the production and exports of all the main minerals mined in the country (iron, titanium, aluminum, copper, lead, gold, asbestos, coal, etc.). In the short term, the Kazakhstan's status of an export-dependent state is unlikely to change since exports of raw materials and getting a stable profit only facilitates this process.

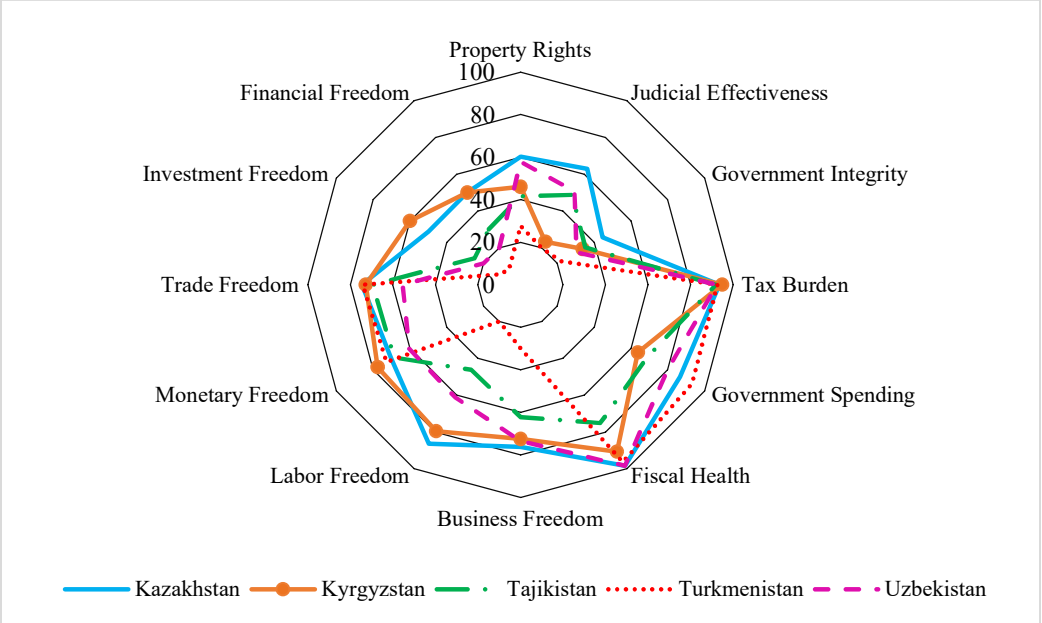

Figure 10. Economic and political freedoms in Central Asian states.

In Turkmenistan, the government proactively supports both the oil-and-gas and mining industries. The country's economy is generally based on the extraction of natural gas and other minerals, the share of which in the GDP structure is estimated at about 30%, which shows us the same obvious problems in the form of an export-oriented economy as in Kazakhstan.

In the Kyrgyz Republic and Tajikistan, in recent years, there has been a positive development trend in the mining industry, mainly due to a large inflow of foreign investment in the local gold mining.

Uzbekistan, as stated above, shows the greatest activity both in increasing the minerals extraction rate and in attracting investment.

According to the UN Secretary General's Report, transition economies (including the Central Asian states) are characterized by tasks of expanding their opportunities to ensure the maximum socio-economic benefits from the extraction of mineral resources. These benefits include diversifying the ties between the mining sector and the local economy, as well as developing new patterns for a more equitable distribution of revenues from mining among all governing bodies (UN Secretary General, 1998). However, only a few countries can establish such a process of economic diversification. Despite significant success in the mining sector, we observe the opposite situation in most cases: their lag behind countries whose economic model was related to the exports of mineral resources.

This is due to the supply of raw materials intended for further processing and uses in other sectors of consumption, rather than finished products, from these countries to the world market, which significantly reduces the export value.

Another important reason for the lagging economic development of countries possessing rich natural resources, but having the status of countries with transition economies, is the need to adhere to the continuity of socio-economic and environmental objectives. This problem can be addressed by promoting education and training of staff for employment in the mining sector, expanding cooperation in the form of attracting consultants from leading foreign organizations, adopting advanced, environmentally friendly production methods, etc.

To increase the economic potential and to get various benefits from the extraction of mineral resources, virtually all Central Asian states have adopted laws to encourage investment in the mining

sector. Due to this fact, since the early 2000s, the inflow of foreign investments in Kazakhstan has been increasing annually, and Uzbekistan is gradually becoming one of the world leaders in the production of uranium and palladium.

It is also worth noting that attracting foreign companies to develop mineral deposits in Central Asia reduces the dominant share of public and private companies in the region and balances the market. Therefore, companies from such developed countries as Canada, USA, China, UK, Russian Federation, Japan, and others are already present in the region.

A competitive environment in the mining sector improves the investment climate and provides an inflow of additional funds to the state budget. However, an excessive enthusiasm for the exports of extracted raw materials may have a negative effect on the national economy in the future. Therefore, it will be expedient to attract investments not only in mining but also in the processing sector in order to manufacture finished products and bring them to the world commodity market.

Conclusions

Summing up our analysis of the Central Asian states and the global mining market, we can draw several conclusions.

Firstly, based on the above review, it is quite clear that the bowels of most of the Central Asian states contain huge reserves of non-ferrous metals, including noble and rare metals, iron, coal, phosphorite, as well as for non-metallic minerals and precious stones. However, the minerals distribution unevenness in the region under consideration is very high: there are much larger reserves of mineral raw materials in Kazakhstan than in other countries.

Secondly, we have demonstrated that this region is very attractive for many developed countries due to the existence of strategic routes between Asia and Europe and a possible increase in demand for energy after the end of the COVID-19 pandemic. Central Asia is the world's oldest oil-producing region, where about 5% of the world's reserves are concentrated in the fields on the shores of the Caspian Sea. Therefore, in view of the strengthening trend of economic growth, which is observed not only in economically advanced states, but also in developing countries, the energy potential of the region under consideration is regarded as one of the key sources for meeting the energy needs of non-regional actors.

Thirdly, creating favorable economic conditions to attract foreign investors should not be limited to the mining sector. Measures should be taken to involve the world's leading metallurgical processing companies, which will have an even more positive effect on the economic development of the region.

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