

Overview of the Mining Industry

Russia, Kazakhstan, Ukraine, and Uzbekistan

November 2020

COUNTRY OVERVIEWS*



	RUSSIA	UKRAINE	KAZAKHSTAN	UZBEKISTAN
Population	144 mn	44 mn	19 mn	34 mn
Rural / city	26% / 74%	31% / 69%	43% / 57%	49% / 51%
GDP in real terms / PPP, USD bn, 2019	1,700 / 4,282	154 / 561	180 / 508	58/245
GDP per capita current prices / PPP, USD	11,585/ 29,181	3,659 / 13,341	9,731/27,444	1,725 / 7,289
World Bank's Ease of Doing Business 2020 ranking	28 (↑ *)	64 (↑)	25 (↑)	69 (↑)
Corruption Perceptions Index score, 2019	28 (↑)	30 (↑)	34 (↑)	25 (↑)

* - improved

↑- declined

*Sources: National Statistical Agencies, UNDP, The World Bank, own estimates

RUSSIA KEY POINTS*



Russia's Share in Global Production



- The mining industry plays a significant role in the Russian economy. Low production costs and long-standing traditions are the main competitive advantages of the country's mining industry.
- Russia's mining sector growth will be limited in the coming years due to the sluggish business environment, state regulations, and negative Covid-19 impact.
- Coal and iron ore will mainly be supported by government investment and domestic construction sector growth.
- Unlike the oil & gas industry, most mining companies are privately owned (an exception - diamond producer Alrosa).
- Russia still holds vast and untapped reserves (e.g. 85% of iron ore reserves untapped; coal reserves projected to last for ≈ 450 years at current excavation rates).
- Russian operations are undergoing updating or renewal to increase efficiency and shift from manual systems to mechanical and/or automated systems.
- An increasing focus on safety and elimination of occupational hazards indicates a great potential for foreign suppliers and technology.
- Industry market value: USD 112bn (2019).

*Sources: Fitch Solutions, BMA Research, IMF, EMIS

RUSSIA MAP OF RESOURCES*

21% of the world's mineral resources are located in Russia









Coal Production, mn tons



^{*}Sources: Fitch Solutions, BMA Research, IMF, EMIS

COAL*

- 162bn tons of coal deposits in the country.
- Second largest recoverable coal reserves in the world.
- Most of Russia's coal deposits are located in Siberia and the Far East, with Kuznetsk basin (Kuzbass) holding the most of them (60% of coal production in Russia) and Kansko-Achinsk basin (15% of total production) being the second most important region in terms of coal deposit concentration.
- Government investment, strong domestic construction sector growth, and the country's vast deposits are expected to keep stimulating Russia's coal production over the coming years.
- Coal exports are expected to shift towards the Asian market.



Iron Ore Production, mn tons



IRON ORE*

- The iron ore industry, similarly to the coal industry, will benefit from strong domestic construction sector growth.
- Russia is the third country in the world in terms of iron ore reserves, which amount to more than 25bn tons.
- The weakening of ruble allows Russian producers to increase profit margins as Russia's iron ore production costs are priced in local currency, while it is initially traded in USD.
- Approx. 42% of iron ore production in Russia comes from Metalloinvest, one of the largest mining and metallurgy companies in Russia and the country's biggest iron ore producer.

*Sources: Fitch Solutions, BMA Research, IMF, EMIS



Gold Production by Key Players, mn oz



*Sources: Fitch Solutions, EMIS, Companies websites

COPPER

- The country is also one of the major global suppliers of copper.
- It is the 9th largest copper miner in the world, accounting for 3.8% of global production.
- In 2019 it produced 750,000 tons of cooper.

GOLD*

- With its 10.45% of global gold production, Russia is the world's third largest gold producer.
- 83% of gold in Europe comes from Russia.
- Russia's output amounted to 10.8mn oz of gold produced in 2019 and is expected to reach 11.3mn oz in 2020.
- As weak economic growth and higher inflation keep real interest rates low in major developed markets, gold prices will continue growing in the coming years.
- Polyus Gold's Natalka mine is seen as a key driver of Russia's gold production growth in the near future. The mine poured its first gold in December 2017 and had an output of 450,000 oz in 2019.





PALLADIUM and PLATINUM*

- Russia holds the world's third largest deposits of platinum group metals, much smaller than South Africa's and somewhat smaller than Zimbabwe's.
- Russia is the world leader in palladium production. It accounts for more than 40% of global palladium output.
- Palladium production is largely dominated by Norilsk Nickel, Russia's leading metals and mining company, which accounts for approximately 90% of the country's total palladium production. The company is the global leader in palladium production and is the worlds forth largest producer of platinum.
- The country's platinum production growth is expected to be rather insignificant.

*Sources: Fitch Solutions, EMIS



thou. tons 328 303 280 276 272 222 2017 2018 2019 2020 2025f 2029f

Nickel Production,

*Sources: Fitch Solutions, IMF, EMIS

NICKEL*

- Nickel output is expected to grow higher over the coming years, mainly due to rising global prices.
- Norilsk Nickel is the world's leader in refined nickel production and accounts for ~90% of total Russian nickel output.
- In October 2018, BASF has selected Harjavalta, Finland, where the nickel and cobalt refinery owned by Norilsk Nickel is situated, as the first location for battery materials production serving the European automotive market. The start of production is planned for the end of 2020. The plant is expected to produce 300,000 electric vehicles per year.
- Such partnership can be seen as an important growth opportunity for the Russian nickel sector:
 - Norilsk Nickel is to benefit significantly from the growth of the electric vehicles market as manufacturers increasingly adopt nickel-heavy NMC cathode batteries.
 - Europe is currently experiencing a lack of local battery manufacturing capacities to react to its growing demand for electric vehicles.

RUSSIA STATE REGULATION



The mining sector in Russia is characterized by high entry barriers and a regulatory environment hostile to foreign investment.

In Russia, subsoil operations can be conducted under one of the following types of subsoil licenses: exploration, production, and combined licenses.

The fees payable by subsoil users include:

- A bid fee to participate in a tender or auction
- A signing bonus for the award of the subsoil license
- One-time payments due when certain events specified in the subsoil license occur
- Regular payments for subsoil use
- Taxes
- Regulatory authorities:
- Ministry of Natural Resources and Environment
- Federal Agency for Subsoil Use (Rosnedra)
- Federal Supervisory Service for Nature Management (Rosprirodnadzor)
- Federal Service for Ecological, Technological and Nuclear Supervision (Rostekhnadzor)
- The subsoil license holder generally undertakes certain commitments under the subsoil license, including:
- To meet certain annual exploration and/or production targets
- To keep environmental contamination within specified limits and remedy instances of environmental pollution

*Sources: Fitch Solutions, BMA Research, IMF, EMIS

Russian law stipulates that gold ore deposits exceeding 50 tons, found on premises leased to legal entities can be declared assets of national strategic importance and can be ceased (compensation is paid) from the asset holder. This rule is under consideration for change to a more liberal, asset holder friendly approach.

The Strategic Law stipulates that foreign miners willing to enter the sector must obtain a permit from a government commission, headed by the prime minister, and can own a stake of no more than 25% in any Russian mine.

Thus, the best way for a foreign investor to gain exposure to the Russian mining industry is through minority stake purchases or establishing joint ventures with local players.

According to the development program until 2035 approved on June 13, 2020, Russian government will support the coal industry to increase production from 440.65mn tons in 2019 to 485mn tons (conservative scenario) or to 668mn tones (optimistic scenario) in 15 years. In addition, the program provides for the renewal of production facilities and the creation of new production complexes in Kuzbass, Rostov Region, as well as in the Far East and Eastern Siberia*.

RUSSIA MAIN PLAYERS



Русал	UC RUSAL PLC Aluminum	RUSAL is a leading, global aluminum producer. Production (2018): Aluminum - 3.75mn tons, alumina – 7.77mn tons; foil production capacity – 89,000 tons/year. 5.9% of global aluminum production, 6.3% of global alumina production in 2019. RUSAL operates in 19 countries on 5 continents.
норникель	Norilsk Nickel Diversified mining	Russia's largest diversified mining company. It mines ~90% of nickel in the country and holds a 40% share in Russian copper production. The company supplies ~75% of total country's platinum output. Ist global palladium and refined nickel producer, 4th global platinum and rhodium producer, 11th global copper miner. The company also produces gold, silver, iridium, selenium, and others.
	Ural Minerals and Mining Company (UMMC) Copper	One of the top Russian producers of major commodities, including copper, zinc, coal, gold, and silver. Additionally UMMC produces lead, selenium, tellurium, cadmium, and indium. Metals production operations located primarily in the Urals (Sverdlovsk, Chelyabinsk, Orenburg regions, and Bashkortostan Republic). Coal assets mainly located in Siberia (Kemerovo region).
Металлоинвест	Metalloinvest Iron ore	Producer of 39% of Russian iron ore. Metalloinvest extracts iron ore from the second largest measured iron ore reserve base in the world with approximately 14.1bn tons of proven and probable reserves on a JORC (IMC Montan) equivalent basis and about 140 years of reserve life.
<i>©</i> суэк	SUEK Coal	Producer of 36% of Russian thermal coal. Operates 26 large-scale open pits and underground mines in Siberia and Far-Eastern Russia with total estimated reserves of 7.6bn tons. 106.2mn tons coal production in 2019.

RUSSIA MAIN PLAYERS



EBPA3	Evraz Diversified mining	Russia's second biggest coal producer. Vertically integrated steel, mining, and vanadium business with main operations in Russia. Evraz is among the top steel producers in the world, with crude steel production of 14mn tons in 2019, and accounts for 15% of total steel production in Russia.
ΑΛΡΟCΑ	Alrosa Diamonds	State owned, accounts for 95% of Russian extraction. Dominates the diamond subsector.
НЛМК	Novolipetsk Steel PJSC Steel	Novolipetsk is the main production site of NLMK Group, largest steel producer in 2018 (13.3mn tons), with 18% of all steel produced in Russia. 31% – Share of the Russian CRC market. 23% – Share of the Russian HDG market. 22% – Share of the Russian pre-painted steel market. 81% - Share of the Russian transformer and dynamo steel market.
Северсталь	Severstal Iron ore	Producer of 39% of Russian iron ore. Metalloinvest extracts iron ore from the second largest measured iron ore reserve base in the world with approximately 14.1bn tons of proven and probable reserves on a JORC (IMC Montan) equivalent basis and about 140 years of reserve life.
REARINGOODER BOOK & STERE WORKS	Magnitogorsk Iron & Steel Works PJSC Steel	MMK is one of the world's largest steel producers and a leading Russian metals company. The company's operations in Russia include a large steel producing complex encompassing the entire production chain, from preparation of iron ore to downstream processing of rolled steel. In 2019 MMK Group produced 12.5mn tons of crude steel and 11.3mn tons of commercial steel products.

RUSSIA MAIN PLAYERS



🛟 POLYUS	Polyus Gold Gold	Owns second largest proven reserves in the world (68mn oz). Extracted 26% of the gold in the country in 2017. Gold production in 2019 – 2.84mn oz, which is 16% higher than in 2018 (2.44mn oz).
KINROSS	Kinross Gold Gold	Is the largest foreign investor in the country's gold mining industry, has 25 years of successful experience in Russia. Gold production in 2019 was 527,343 oz.
POLYMETAL Promotione Act	Polymetal International PLC Gold	In 2019, gold equivalent (GE) production amounted to 1.614mn oz. Both extending mine life through near-mine exploration and new discoveries from greenfield exploration contribute to the company's long-term growth prospects. In 2019, Group Ore Reserves increased by 5% year-on-year and are now estimated at 25.2mn oz of GE. Among the main drivers were the successful resource-to-reserve conversion at Mayskoye and the completion of a revised estimate at Nezhda following the company's consolidation of 100% ownership in the property.
HIGHLAND GOLD MINING Ltd.	Highland Gold Mining Ltd Gold	Highland Gold Mining Limited was incorporated in Jersey in 2002 for the purpose of acquiring, consolidating, and developing a portfolio of quality gold mining projects in the Russian Federation with good growth potential. Production of gold in 2019 was 292,287 oz, in 2018 263,795 oz.

INTERNATIONAL COMPANIES ACTIVE IN RUSSIA'S MINING INDUSTRY

China

Sany

Canada

Hatch Wood Kinross Gold

Japan Komatsu

Belarus BelAZ

UK Highland Gold JCB

Sweden

Atlas Copco Sandvik Volvo

USA

Caterpillar Inc. Boart Longyear

Australia

AMC Micromine Newtrax BHP Billiton SICK Alcoa RPM Global

Germany Liebherr





OPPORTUNITIES FOR FOREIGN SUPPLIERS IN RUSSIA

SCHNEIDER GROUP

- The Russian mining sector is highly dependent on imported mining equipment and spare parts.
- The value of Russian mining equipment and machinery imports floats around USD 3bn annually.

Share of Imported Goods by Category

Hydraulic excavators	95%
Loaders	60%
Drilling & boring equipment	50%
Bulldozers	50%
Low volume dump trucks	40%
Conveyors	30%
Stackers	30%
Automation equipment	30%
High volume dump trucks	20%
Power shovels	10%

To maintain its current growth, the industry is highly dependent on international equipment.

- Lifting machinery & cranes
- Roadheaders
- Roller crushers
- Mechanized penetrators
- Concentrate dewatering equipment
- Geological IT surveying solutions
- Control support systems
- Magnetic separators
- Photo & X-ray separators
- Self-propelled drilling rigs
- Hydraulics

KAZAKHSTAN KEY POINTS*

- Mining accounts for roughly 13 to 14 percent of Kazakhstan's gross domestic product and more than 20% of the country's exports. Gold mining, in particular, has seen impressive growth over the past few years as foreign mining companies made huge investments into the country's top mines.
- The predominance of the extractive sector in Kazakhstan's economy makes the country vulnerable to commodity price fluctuations and risks related to resource dependency.
- The government initiated a wide-ranging reform agenda aimed at diversifying economic activity after the country faced a sharp downturn in 2015-2016, resulting from the fall in commodity prices and decreased demand in Russia and China, Kazakhstan's key export markets.
- Kazakhstan's hard minerals sector suffers from the lack of new exploration activity. Most of the mines in Kazakhstan have been operating for decades.
- Kazakhstan is working to enhance the investment attractiveness of its extractive sector, particularly of its mining exploration activities.
- The new Code on Subsoil and Subsoil Use (SSU Code) entered into force in 2018. It introduced key reforms, many of which can potentially improve the investment climate.

- Ferrous and non-ferrous metals mined in Kazakhstan, are exported to Japan, South Korea, USA, Canada, Russia, China, and the EU.
- Kazakhstan has the largest recoverable coal reserves in Central Asia and is the second largest coal producer in the region (after Russia). The total coal reserves in Kazakhstan amount to 162bn tons.
- In January-February 2020, the country's mining companies produced 18.3mn tons of coal.
- In 2020, Kazakhstan plans to mine 120mn tons of coal. Of these, 82mn tons will be delivered to the domestic market of the country, 38mn tons for export.
- Coal remains the main source for the country's total electricity generation. Kazakhstan's power industry will continue to drive the country's coal industry in the near future.
- Iron ore production in Kazakhstan in 2019 reached 48mn tons. Most of the iron ore (78%) remains in the domestic market for steel producers and only 22% is exported to China and Russia.
- Copper Production in Kazakhstan increased to 40,905 tons in September from 39,758 tons in August of 2020.

*Sources: OECD; Ministry Of Industry And Infrastructure Of The Republic Of Kazakhstan, Clean Earth Technologies, Fitch Solutions, National Statistical Agencies, Netherlandsworldwide.nl, Trading economics



KAZAKHSTAN KEY POINTS*

- Kazakhstan has a variety of minerals. Of the 105 elements in the periodic table, 99 are found in Kazakhstan, 70 have explored reserves, and more than 60 are in production.
- Kazakhstan produces around 13% of the world's chromite, 6% of the titanium sponge, and 3% of the magnesium. Other important mineral production includes cooper, iron ore, precious metals, zinc, and aluminum.
- The country is estimated to contain 30% of the world's reserves of chrome, 25% of the manganese, 10% of the iron ore, 10% of the copper and 13% of the lead and zinc, and 12% of the world's uranium.
- In 2019, approximately 43% of the world uranium mining by the in-situ recovery (ISR) uranium extraction method, originated in Kazakhstan. The country is the leading uranium miner in the world. Kazakhstan also holds the second largest reserves of uranium (behind Australia).
- Kazakhstan has 12% of the world's uranium resources and in 2019 produced about 22,800 tons of it.

*Sources: OECD; Ministry Of Industry And Infrastructure Of The Republic Of Kazakhstan

Kazakhstan's Position in the World's Mineral Reserves*

- Zinc (Zn), Tungsten (W), Barite (BaSO4)
- 2 Uranium (U), Silver (Ag), Lead (Pb), Chromite (FeCr2O4)
- **3** Copper (Cu),
- **4** Fluorite (CaF2)
- 6 Molybdenum (Mo)
- 7 Gold (Au)
- 12 Coal



KAZAKHSTAN KEY POINTS*



Uranium Production in Kazakhstan*, tons



Uranium production by Kazatomprom

Uranium production in Kazakhstan

*Sources: Companies websites, Ministry of Energy of the Republic of Kazakhstan, Kazatomprom National Atomic Company, World Nuclear Association

- Uranium production in Kazakhstan is operated mainly by Kazakhstan's national operator Kazatomprom (23% of global primary uranium mining), which is the world's largest producer of natural uranium. Kazatomprom operates through its subsidiaries, JVs and Associates, with 26 deposits grouped into 13 asset clusters, all of which are located in Kazakhstan.
- The other player in the uranium business in Kazakhstan is Betpak Dala (13% of the total amount of uranium mined in Kazakhstan), a joint venture of Kazatomprom and Uranium One (Rosatom).
- Kazakhstan has no operational nuclear reactors. The only one available in Aktau was decommissioned in 2001.
- However, the country operates a major plant, making nuclear fuel pellets and aims eventually to sell value-added fuel rather than just uranium.
- Kazakhstan exports uranium to China (34%), India (23%), EU (9%), USA (5%) and other countries.

KAZAKHSTAN MAP OF RESOURCES*





KAZAKHSTAN INDUSTRY FORECAST





*Sources: Fitch solutions, National Statistical Agencies, Companies websites, Gornaya Encyclopedia

COAL*

- Production growth of coal in Kazakhstan is supported by domestic demand from the power sector.
- Most of the coal deposits are located in the Karaganda, Pavlodar, and Kostanai regions. The Karaganda coal basin is the main coal base of Kazakhstan. Karaganda coal is coked, its quality is very high. The total coal reserve of this basin is 45bn tons. The second most important coal basin is Ekibastuz (containing Bogatyr, Severny, and Vostochny mines).
- Kazakhstan's coal output growth is generated by Bogatyr Komir (Bogatyr Coal), which is the largest coal mining group in Kazakhstan. Currently 70% of all the coal mined in Ekibastuz coal basin and 40% of the total volume of coal production in Kazakhstan is from Bogatyr Coal LLP. Its balance reserves amount to 2.62bn tons. The production capacity of the enterprise is 42mn tons of coal p.a., including 32mn tons of coal from the Bogatyr mine and 10mn tons from the Severny mine.

KAZAKHSTAN INDUSTRY FORECAST



Iron Ore Production, mn tons



IRON ORE*

- Kazakhstan holds large iron ore reserves, ranking 11th in the world, with a 10% share of global reserves.
- The volume of iron ore produced in Kazakhstan meets domestic demand in full. Main export destinations are Russia and China.
- Kazakhstan is a key supplier of iron ore to the Chinese market.
- Investments from foreign companies will support the mining industry further. For instance, Eurasian Resources Group (ERG) has invested USD 2.5bn into the country's mining industry as part of The state program of industrial-innovative development of Kazakhstan for 2015-2019, incl. USD 454mn invested into a crushing and preparation plant at DOF-2 and MMC-4.
- NORINCO International and "Aktobe Steel Production" LLP are in process of joint construction of an iron ore processing plant at Kokbulak deposit. The project value is USD 710mn and the iron ore processing capacity is expected to reach 13mn tons. After completion, this project will become the largest iron ore processing plant in Kazakhstan.

*Sources: Fitch Solutions, BMA Research, IMF, EMIS

KAZAKHSTAN INDUSTRY FORECAST



Copper Mine Production, thou. tons



*Sources: National Statistical Agencies

COPPER

- The global copper market is expected to enter a supply deficit in the medium term as output from existing mines declines and demand from traditional and new sources continues to grow.
- Copper is an essential raw material for modern infrastructure, energy generation and transmission, transportation, communications, industrial machinery, and electrical appliances. Demand growth from power infrastructure development drives the global demand of copper. Global copper consumption is forecast to rise 49% by 2040.
- 92% of the copper is exported to foreign countries. Main reserves of copper are concentrated in East Kazakhstan and Karaganda. The main industrial types of ores are cuprous sandstones (71%) and porphyry copper (24%). The largest ore deposit of copper sandstones is Zhezkazgan.
- KAZ Minerals is one of the largest copper producers in Kazakhstan and one of the largest globally. The company operates the Bozshakol open pit mine in the Pavlodar region of Kazakhstan, the Aktogay open pit mine, three underground mines in the East Region of Kazakhstan, and the Bozymchak open pit mine in Kyrgyzstan.

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KAZAKHSTAN STATE REGULATION

- The new Code on Subsoil and Subsoil Use (SSU Code) entered into force in 2018.
 It introduced key reforms, many of which can potentially improve the investment climate.
- The new SSU Code contains a number of improvements in the area of solid minerals, including the processes of licensing, environmental assessment, and availability of geological data.
- The new Code is formulated on the basis of Western Australia's model. It aligns its mining policy framework with international models.
- New SSU Code has positive impact on the country's investment attractiveness, providing further opportunities for foreign funding of mining projects in Kazakhstan.

- Currently, potential operators can have access only to subsoil plots mentioned in the State Subsoil Fund Management Programme. However, new subsoil plots are regularly added to the programme, which aims at covering the entire territory of Kazakhstan by the end of 2022.
- Operators now estimate their reserves under the CRIRSCO-aligned KAZRC standard, which facilitates international evaluation of projects.
- Privatization is the key development strategy for Kazakhstan. The second wave of the privatization of Kazakhstan's state-owned companies is ongoing; Samruk-Kazyna, as the operator of many state assets, is an active player in this process.



KAZAKHSTAN MAIN PLAYERS



Тау-Кен Самрук

Tau-Ken Samruk

Lead, zinc, gold, copper, tungsten, iron "Tau-Ken Samruk NMC" JSC is a group of companies of Sovereign Wealth Fund "Samruk-Kazyna" JSC. "Tau-Ken Samruk NMC" JSC is a partner of "Glencore International" and owns 30% shares in the authorized capital of LLP "Kazzinc".



Kazatomprom

Uranium, rare metals Kazatomprom is the world's largest producer of natural uranium.



Eurasian Resources Group

(HQ in Luxemburg) Ferroalloys, iron ore, aluminum, copper, cobalt, coal Private company. The dominant foreign miner in Kazakhstan. Company announced the launch of a "Smart mine" project at the Kacharsky iron ore mine, which will use monitoring and artificial intelligence in iron ore production facilities. The project will involve a USD 10mn investment.

Arcelor Arcelor Mittal

ArcelorMittal Iron ore, coal ArcelorMittal has iron ore and coal mines in Kazakhstan. ArcelorMittal is a steel and mining company, producing semi- and finished steel products.

KAZAKHSTAN MAIN PLAYERS





Kazakhmys (trading as KAZ Minerals) (HQ in Kazakhstan)

Copper, zinc, silver and gold Kazakhmys is a private company. It conducts operations from mining ore to producing finished metal. It is also involved in the mining of coal for power generation, which is used at the company's mining sites. It carries out the exploration, evaluation, development, mining, and processing of the company's mineral resources and conducts the sales of metal products. KAZ Minerals operates the Bozshakol and Aktogay open pit copper mines in Pavlodar and the East Region of Kazakhstan, three underground mines in the East Region of Kazakhstan, and the Bozymchak copper-gold mine in Kyrgyzstan.



Kazzinc

(HQ in Kazakhstan) Zinc and lead Private company (69.61% of shares held by Glencore International AG, HQ in Switzerland).

GLENCORE Glencore Plc

Zinc, lead, copper, gold One of the largest diversified natural resource companies in the world, operating in 50 countries. The company's major producing assets include Kazzinc, an integrated zinc, lead, copper, and gold production facility in Kazakhstan.

UKRAINE KEY POINTS*

- Mining activities in Ukraine are currently almost exclusively focused on the extraction of coal and iron ore.
- There are more than 20,000 deposits in Ukraine, of which 8,761 are of industrial importance.
- In total 117 different minerals can be found, of which 99 are mined, incl. energy resources (natural gas, coal, oil).
- The country holds the 7th largest coal (>100bn tons) and iron ore reserves (>30bn tons) in the world.
- Ukraine is one of the largest holders of reserves of manganese ores (140 mn metric tons, 2nd worldwirde), titanium (5.9 mn metric tons of ilmenite and 2.5 mn mt of rutile), iron ore (6.5 mn mt of crude ore and 2.3 mn mt of iron content), coal (31,184 mn mt), and uranium (114.1 thou. mt).

- Ukraine has significant reserves of natural gas, oil, salt, sulfur, graphite, magnesium, kaolin, nickel and mercury.
- Explored stocks utilization rate: 40%.
- Market value of all deposits in Ukraine: USD 7.5 trillion.
- The mining industry accounts for 16% of Ukraine's total industrial production. The volume of minerals and metals export is 32.5% of total commodities export.
- The absolute leaders of the industry's exports are iron ores and concentrates, which accounted for 7% of Ukraine's total exports in 2019.
- The country's largest coal and iron ore reserves and mines are located in Eastern Ukraine, an area that is currently experiencing political and military conflicts, which resulted in the loss of access to up to 66% of Ukraine's metallurgical coal needed to make steel and 75% of the country's former coal output.

nergy, Eniscuola, National statistical services, Ministry of Energy and Environm



UKRAINE KEY POINTS*

- An official blockade of all transport links imposed by the Ukrainian government on the rebel-held eastern regions on March 2017, where coal mines and steel mills are located, remains in place as of June 2020. The key challenge is that up to 66% of Ukraine's metallurgical coal needed to make steel lies in the separatist-controlled Donetsk and Lugansk provinces. Nevertheless, it can be noted that the sharp decline in Ukraine's mining industry value of 2014-2015, was partly compensated by its growth in the following years, which is expected to continue until the end of 2019. Indeed, it rose to UAH 175bn in 2019, up from UAH 108bn in 2015. Further dynamics are not as positive: Ukraine's mining industry value is expected to decline starting from 2020, to reach UAH 130bn in 2024.
- Ukraine's major export destination of coal and iron ore is Western Europe, where current demand is sluggish. Allegedly coal currently extracted in the separatist controlled areas of Eastern Ukraine is shipped to Russia and resold to Ukraine as part of a continuous cooperation that imports Russian coal to Ukraine in order to secure the energy supply in the 14 thermal power plants operating in the country.
- Production levels of coal have dropped by 9% to approx. 31mn tons (in 2019) due to low demand following an unusually warm winter in Central and Eastern Europe. Coal output is expected to increase during the coming years, by 3-5% annually. At the same time, the output of iron ore also experienced a slight decrease of 1.5% in 2019, and is expected to grow 1-2% annually, to reach 69.4 mn tons in 2029.

SCHNEIDER GROUP

PROCUREMENT*

- In 2019, USD 260mn (+70% yoy) worth of equipment was imported, mainly from China, Germany, and the US.
 Machines and equipment were intended for moving, grading, developing, leveling, ramming, compacting, extracting, or drilling soil, minerals, and ores.
- In 2019, USD 106mn (-28% yoy) worth of equipment was imported, mainly from China, Russia, and Italy. Machines and equipment were intended for sizing, screening, separating, washing, crushing, grinding, blending, or mixing of soil, stones, ores, or other mineral resources.

*Sources: Mining World Ukraine



UKRAINE INDUSTRY FORECAST



Iron Ore & Coal Production, mn tons*



Iron ore

Coal

 The country's fractured political climate and poor business environment represent a large barrier to new investment in iron ore mining.

- Exploitation of undeveloped resources has slowed down due to ongoing struggles with supply chain of developed and operating facilities.
- Ferrexpo (Switzerland based) still has not started development of Brovarskoye and Manuilovskoye deposits, which hold reserves of 7.4bn tons, and is rather unlikely to do so over the forecast period.
- Coal production has decreased due to the unusually warm winter in Eastern Europe and large parts of Russia as well as environmental concerns over the use of coal in general.
- General infrastructure is often outdated and lacks investment. Work hazards and work-related accidents indicate a high potential for foreign suppliers.

*Sources: Mining World Ukraine, Fitch Solutions, Metinvest

UKRAINE INDUSTRY FORECAST



COAL*

- In 2019, 31.2mn tons of coal were produced by state and private enterprises. State run mines accounted for 12% of total output and private-run mines for the remaining share.
- Prior to the onset of the recent domestic conflict, coal accounted for about 36% of Ukraine's energy consumption, putting it narrowly ahead of natural gas in the country's energy mix. Traditionally this fuel has been sourced domestically from the country's mines (with nearly all Ukraine's 14 thermal power plants operating on coal), and also imported, mainly from Russia, which in 2013 accounted for 72% of Ukraine's total coal imports.
- While Russian coal imports from Ukraine have remained largely constant despite the recent hostilities, the country's domestic coal supply has been severely disrupted given that half of the plants are equipped to use coal from the country's Donbas region, which is only scarcely available due to separatist occupation. The region accounts for almost 75% of the country's total coal output; although the Ukrainian government still controls 35 coal-producing mines in the region, most of them are non-operational as a result of flooding or exhaustion. Overall, nearly 30% of the country's coal mines are inactive.
- The current COVID-19 pandemic, which has disrupted the mining industry worldwide, is expected to have a lesser impact on mining in Ukraine. However, the country's coal industry will likely suffer considerably from significant decline in global coal prices.

Sources: Ministry of Energy and Environmental Protection of Ukraine, Fitch Solutions

IRON ORE

- Ukraine's iron ore industry will continue to witness subdued output in the coming years as no end in sight emerges to the current conflict with Russia and the Donbas blockade, with continuous potential for a flaring-up of tensions, that could pose further disruptions.
- However, several factors, which are able to contribute to the industry's recovery, can be noted. Strengthening of local players, such as Metinvest, which is currently focusing on improving its iron ore production and transportation processes, is among major phenomena pointing at the possibility of Ukraine's iron ore industry recovery.
- The country's largest steel producer Metinvest achieved an increase in production of 1.165mn tons of iron or concentrate (+6%) in 2019 compared to 2018. In 2019, it produced 29.028mn tons of iron ore concentrate. The company has also shown promising results in the first quarter of 2020: its production of iron ore concentrate increased by 6% compared to the first quarter of 2019 and reached 7.606mn tons.
- Up to 80% of domestic iron ore production is located in government-controlled areas.

UKRAINE STATE REGULATION*

- The Ukraine Mineral Resources Code is the main source of legislation regulation the use of mineral resources in Ukraine.
- Principally, mineral resources are owned by the people of Ukraine. As a regulatory body, empowered by the people of Ukraine, the state (State Geological Service) issues permits for extracting subsoil resources and consequential usage (sale) of the materials. Oftentimes subsoil extraction permits go hand in hand with land-use concessions.
- In 2020, 75 mineral deposit sites (with 26 types of minerals) are available for international investors for concession tenders.

- Latest Developments:
 - Law of Ukraine No 2545-VIII on Ensuring of Transparency in Extractive Industries – increased compliance with EU legislation regarding transparency of information, financial reporting, etc.
 - Resolution of the Cabinet of Ministers of Ukraine (CMU) No. 333 on Amendment of Procedures Approved by the Resolutions of CMU No 594 and 615 – introduced significant changes to procedures related to the auction, issuance, renewal and amendment of special permits for subsoil use for oil & gas extraction.



UKRAINE MAIN PLAYERS





Vertically integrated company stretching from mining iron ore to steel production. Main types of products are sinter ore with an iron content of at least 53.5% and an off-grade ore mass fraction (blast furnace) with an iron content of at least 34%. Capacity of mining and processing production: 24.2mn tons of crude ore and 9.8mn tons of concentrate

METINVESTMetinvest
GroupVertically integrated conglomerate stretching from mining iron ore and coal to steel production.
Operates business such as: PJSC SEVGOK, PRJSC INGULETS (annual sales volume: 14mn tons
Iron ore,
CoalVertically integrated conglomerate stretching from mining iron ore and coal to steel production.
Operates business such as: PJSC SEVGOK, PRJSC INGULETS (annual sales volume: 14mn tons
of iron ore concentrate), and PJSC TsGOK (annual sales volume: 6.6mn tons of iron ore
concentrate + 2.3mn tons of pellets) in Dnipropetrovsk Oblast.

FERREXPOIron ore pellet producer with annual production of 10.5mn tons of pellets (2019). The FerrexpoIron oreGroup is the largest producer and exporter of iron ore pellets among the former Soviet Union
countries. Its production assets include Poltava Mining and Yeristovo Mining.

producers of gold (9th in the world) and uranium (5th) in 2020. The country also produces copper, silver, coal, phosp

also produces copper, silver, coal, phosphate, molybdenum, potassium, tungsten, lead, zinc, and other minerals. The country has an abundance of natural gas, used both for domestic consumption and export, and oil used for domestic consumption.

Uzbekistan is one of the world's largest

 To this day, 40 deposits with uranium reserves located within 27 deposits have been explored in the country. Explored and estimated uranium reserves amount to 185,800 tons. The country does not have its own atomic industry, hence all lowenriched uranium produced is exported.

- The mineral resource base in Uzbekistan is one of the main items of FX earnings in the country's economy. Today, this base makes up more than 1,800 deposits and about 1,644 prospective manifestations of minerals, 118 types of mineral raw materials, of which 65 are developed. The mineral resources of Uzbekistan are estimated to be worth about USD 11 trillion.
- The volume of products produced by mining and quarrying enterprises in January-September 2020 amounted to UZS 21.5 trillion, or 9.6% of the total industry.
- Compared with the same period last year, there is an increase in the production of kaolin by 72.7%, crushed stone by 0.7% and oil by 4.5%. At the same time, there is a decrease in the production of gas condensate by 34.2%, gravel by 64.5%, natural gas by 19.1% and coal by 6.9%.



UZBEKISTAN KEY POINTS*

UZBEKISTAN MAP OF RESOURCES*







Gold reserves growth, tons*



GOLD

- In 2020 Uzbekistan's gold reserves rank 15th in the world, and in terms of production, the country ranks 11th with more than 100 tons of gold mined in 2019.
- Gold production is estimated to significantly increase in the coming years.
- Currently 41 gold deposits have been discovered, nine of which are being developed. Gold is mined in the river basin Zaravshan and Kyzylkum.
- The size of proven gold reserves in Uzbekistan is about 1,800 tons.
- Gold mining in the country is concentrated in 2 production plants Navoi and Almalyk mining and metallurgical plants (NMMP and AMMP).
- Gold production at the State Enterprise Navoi Mining and Metallurgical Combine (NMMP) in recent years amounted to more than 60 tons with a total production around 90 tons. The NMMP industrial complex unites five metallurgical plants in Navoi, Zarafshan, Uchkuduk and Zarmitan, Marjanbulak gold recovery plant (MGRP) in the village of Marjanbulak Samarkand.

*Source: Invest in Uzbekistan, Resource World Magazine, National Statistical agencies, Goldhub , USA Today

SCHNEIDER GROUP

COAL*

- Uzbekistan possesses proven reserves of coal in the amount of 1900mn tons, including: brown coal — 1853mn tons, bituminous coal- 47mn tons. Inferred resources amount to over 5.7bn tons of coal. Large reserves of bituminous coal are concentrated in the southern regions – the Surkhandarya and Kashkadarya regions.
- Currently, coal mining is carried out in three fields: The Angren brown coal deposit, the Shargun and Baisun bituminous coal deposits.
- Joint-stock company "Uzbekcoal" is the only enterprise representing the coal mining industry in the country.

- The main activities are exploration, mining, supply, storage, processing, and sale of coal products and a number of related minerals.
- Uzbekistan increased coal production by 4.4% in 2017, to 4mn tons.
- The main consumer of coal fuel is the electric power sector, which accounts for over 85% of total coal consumption and resembles a 20% share in the electricity production of the country.

*Source: Invest in Uzbekistan, UNECE



Uranium reserves growth, tons*



^{*}Source: Invest in Uzbekistan, National Statistical agencies, IAEA

URANIUM

- According to the IAEA, Uzbekistan ranks seventh in the world by uranium reserves (4% of world uranium reserves) and fifth by its production. Currently about 40 deposits in 27 areas have been explored.
- The explored and estimated uranium reserves amount to 185,800 tons, of which 138,800 tons are uranium of sandstone-type, 47,000 tons are black-shale type.
- The monopoly uranium producer in Uzbekistan is the Navoi Mining and Metallurgical Combine (NGMK). The plant currently produces approx. 3,500 thou. tons of uranium per year. It has successfully recovered its production indices to the levels of early 1990's production.
- Uzbekistan does not have its own nuclear industry and all produced low-enriched uranium is exported.
- According to the agreement with the State Corporation "Rosatom", it is planned to build the first nuclear power plant in the country by 2028. The construction is expected to start in 2022. The complex will be comprised of two power units with a capacity of 1200MW each.



Copper and Silver reserves growth, thou. tons*



COPPER and SILVER

- The Almalyk mining-metallurgical plant (AMMP) is the only copper producer in Uzbekistan and one of the largest producers of non-ferrous metals in the Central Asian region.
- AMMP accounts for about 90% of silver production and 20% of gold in Uzbekistan.
- The plant consists of two mining enterprises, two concentration plants, and two metallurgical plants with their own infrastructure. The total volume of production is estimated at more than USD 300mn annually.
- The plant has the right to develop copper-molybdenum and lead-zinc ore deposits in the area of the city Almalyk (Tashkent region). AMMP's raw material base is the Kalmakyr and Sary-Cheku porphyry copper ore deposits (Tashkent region) and the Uch-Kulach lead-zincbarite ore deposit (Jizzakh region).
- Total reserves of copper amount to 16336.2 thou. tons, gold extraction made up 137.1 thou. tons, at the current rate of production-reserves are sufficient for more than 100 years.

*Source: Invest in Uzbekistan, UNECE

UZBEKISTAN STATE REGULATION*

The law of the Republic of Uzbekistan "On the Subsoil" adopted in 2002 is the key law that regulates the activities of mining and metal companies in the Republic of Uzbekistan. In recent years, a number of regulatory acts have been adopted in Uzbekistan to expand investment cooperation in the mining and geological sector:

- Resolution No. 328 of the Government of the Republic of Uzbekistan which approves the lists of prospective areas of strategically important solid minerals
- Decree No. PP-3479 of the President of the Republic of Uzbekistan "On Measures for the Stable Supply of In-Demand Types of Products and Raw Materials to Sectors of the National Economy"
- Republic of Uzbekistan "On Measures to Improve the Activities of the State

Committee of the Republic of Uzbekistan for Geology and Mineral Resources"

- Resolution No. 849 of the Government of the Republic of Uzbekistan dated 18 October 2017 "On Measures to Improve the System of Collection, Delivery and Processing of Nonferrous Metals Scrap and Waste"
- Resolution of the Government of the Republic of Uzbekistan "On Measures to Improve the Procedure for Managing Nonferrous and Ferrous Metals Scrap and Waste"
- An important regulation "On the procedure for issuing licenses for the right to use subsoil plots" has recently been approved by Uzbekistan's Cabinet of Ministers.





UZBEKISTAN STATE REGULATION*



- The effective tax rate depends on the material mined. It consists of:
- State target fund 3.5%
- Extraction tax 4% 10.4%
- Profit tax 14%
- Excess profit tax 50%
- Payments to Uzbekistan Reconstruction and Development Fund (UFRD)
- Other taxes + charges
- Planned overhaul of the tax system targeting companies in the mining sector to reduce tax evasion by state owned corporations by understating of profits, resulting in underpayments to the Uzbekistan Reconstruction and Development Fund (UFRD) and excess profit taxes.

- Privatization of state owned assets to increase competition and make market entry of private corporations more attractive.
- Investments in infrastructure and creation of industrial clusters uniting manufacturers of primary metals and products from subsequent processing stages.
- Development of leasing system for production equipment, including mining and smelting equipment.
- Implementation of professional operating standards aimed at reducing the accident rate, increasing safety, and improving working conditions at the enterprises of the industry.
- The plan for the upgrade and technical renovation of the processing equipment fleet includes a decrease in the amount of obsolete equipment (from 49% to 13%) and increase in the overall amount of equipment in use.

UZBEKISTAN MAIN PLAYERS

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Navoiy MMC SC Gold, Silver

Navoiy MMC (NMMC) is one of the largest gold producers in Central Asia and is fully owned by the state.

- The main gold mining base of the enterprise is the Muruntau field (Central Kyzylkum), which has been mined since 1967.
- The NMMC production complex currently unites four metals plants in: Navoi -1 (MMC-1), Zarafshan -4 (MMC-2 and others), Uchquduq -1 (MMC-3), Zarmitan -1 (MMC-4) and Marzhanbulake -1.

Uzvtortsvetmet JSC

Aluminum, Other non-ferrous metals Uzvtortsvetmet JSC is the sole entity in the Republic of Uzbekistan managing ferrous metals scrap and waste. The state holds a 51% interest in the company, which is controlled by SFI Management Group

• The entity produces secondary aluminum, copper-based nonferrous alloys, lead alloys, nonferrous scrap metals and waste, and other products.

Uzmetcombine JSC

Ferrous metals

The leading ferrous metallurgical enterprise in Uzbekistan. Controlled by SFI Management Group, with a 74% held by the state. only 36% of Uzbekistan's current total demand for rolled ferrous metals is satisfied by the processing of ferrous metals scrap and waste at Uzmetcombine JSC in Bekabad. The remainder (63%) is imported from CIS countries, primarily Russia, Kazakhstan and Ukraine.

UZBEKISTAN MAIN PLAYERS





Almalyk MMC JSC Gold, Copper, Zinc, Lead, Tungsten Almalyk MMC (AMMC) is the only copper producer in Uzbekistan. The state holds a 98% interest in the combine, which is controlled by SFI Management Group

- The enterprise produces refined copper, zinc, lead, and molybdenum concentrates, and other products
- AMMC accounts for about 90% of silver production and 20% of gold production in the country
- Since 2015, the assets of Uzbek Combine of High-Melting and Heat-Resistant Metals JSC have been fully transferred to AMMC. As a result, the combine is also the monopoly producer of tungsten.



JSC UzTransGaz

Fuel and energy

Today, in the structure of the primary fuel and energy resources of the country 97% are oil and gas, 2.3% – coal, 0.7% – hydropower. One of the largest companies in the country is UzTransGaz.



ftegazState-owned holding company of Uzbekistan's oil and gas industry fulfills all hydrocarbon
deposits (264 field: 213 deposits of gas, 137 oil and 176 condensates). Of the total number,
107 fields remain in development.
The national company ranks 11th in the world in terms of natural gas production
(annual gas production is 60-70bn m³).



MARKET RESEARCH DEPARTMENT

About SCHNEIDER GROUP

SCHNEIDER GROUP has been helping businesses to expand into Russia and the CIS since 2003.

Providing expert consulting and first-class business support services, we efficiently guide our customers through the complex process of entering new markets, help them establish branches and subsidiaries that are fully transparent to international management and compliant with local legislation, while our experts offer valuable advice on best practices to optimize processes, mitigate risks, and cut costs.



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