



# EXECUTIVE SUMMARY

13th Mining and Exploration Forum

19-20 April 2023, Astana

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**MINING  
GOES  
DIGITAL**

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Digital**

2023.minexkazakhstan.com  
FORUM WEBSITE



**The 13th Mining and Exploration Forum MINEX Kazakhstan was held in Astana on 19-20 April 2023 under the general theme «Managing natural resources to accelerate national development».**

The Forum offered opportunities for presentation and discussion of key trends, projects, and technologies in the mining and geological industry in Kazakhstan and the countries of the Central Asian region.

Forum website [2023.minexkazakhstan.com](https://2023.minexkazakhstan.com)

**THE 13TH MINEX KAZAKHSTAN 2023 FORUM BECAME THE LARGEST EVENT SINCE ITS INCEPTION IN 2010.**

This growth clearly demonstrates the interest Kazakhstan's mining and mineral exploration industry attracts among national and international businesses.

**THE FORUM AND EXHIBITION ATTRACTED OVER 1000 PARTICIPANTS FROM 231 COMPANIES AND ORGANISATIONS FROM 30 COUNTRIES.**

This growth clearly demonstrates the interest Kazakhstan's mining and mineral exploration industry attracts among national and international businesses.

## **MINEX KAZAKHSTAN FORUM THE YEAR-ON-YEAR GROWTH**



### **THE 14TH MINEX KAZAKHSTAN MINING AND EXPLORATION**

will be held in Astana on 17-18 April 2024

Please feel free to contact us to discuss participation [kz@minexforum.com](mailto:kz@minexforum.com)





## WHAT IS BEING DISCUSSED

**The Forum is focused on discussing Kazakhstan's key trends, projects and success stories in the management of mineral resources, mining industry modernisation and investment opportunities.**

Annually, the Forum brings together the heads of Kazakhstani and international companies who are presenting business cases, projects and development plans. Heads and leading specialists of sectoral ministries, associations, and companies present plans for improving public administration in the field of subsoil use. Experts from Kazakhstan, the countries of the Eurasian Economic Community, Europe, America, Australia, China and Southeast Asia participate in the discussion of key trends and practices of financing, capital construction, improving production efficiency, ESG management, reducing environmental impact, etc.

Technology and service companies organise master classes and business presentations of best-in-class solutions for

all aspects of mining from exploration to mineral procession.

The discussions are attended by leading and junior mining companies, government agencies, stock exchanges and institutional investors, non-profit organizations and associations, legal and consulting companies.

Innovative technologies are presented at technology sessions, master classes and business tracks.

The Forum events are organised in a hybrid format, allowing presentations to be held in person and remotely.

Materials and videos of the sessions are published after the end of the Forum and are available to participants through their personal account.

Reviews of the forum sessions are widely covered in industry and business publications of the Republic of Kazakhstan and abroad.



## WHO PARTICIPATES

The Forum was attended by **524** representatives from **231** mining and metallurgical and service companies, governmental bodies, and manufacturers of equipment for exploration, mining and processing of ores and minerals.

More than **80%** of in-person participants of the MINEX Kazakhstan 2023 forum participate in decision-making as directors, board members, and senior executives.



**25%** Mining companies

**18%** Companies providing geological technologies and services

**14%** Manufacturers and suppliers of equipment

**10%** IT and communication companies

**6%** NGOs and Academic Organisations

**5%** Law firms

**5%** Consulting companies

**4%** Government agencies and organisations

**3%** Financing and investments

**3%** Laboratories and analytical services

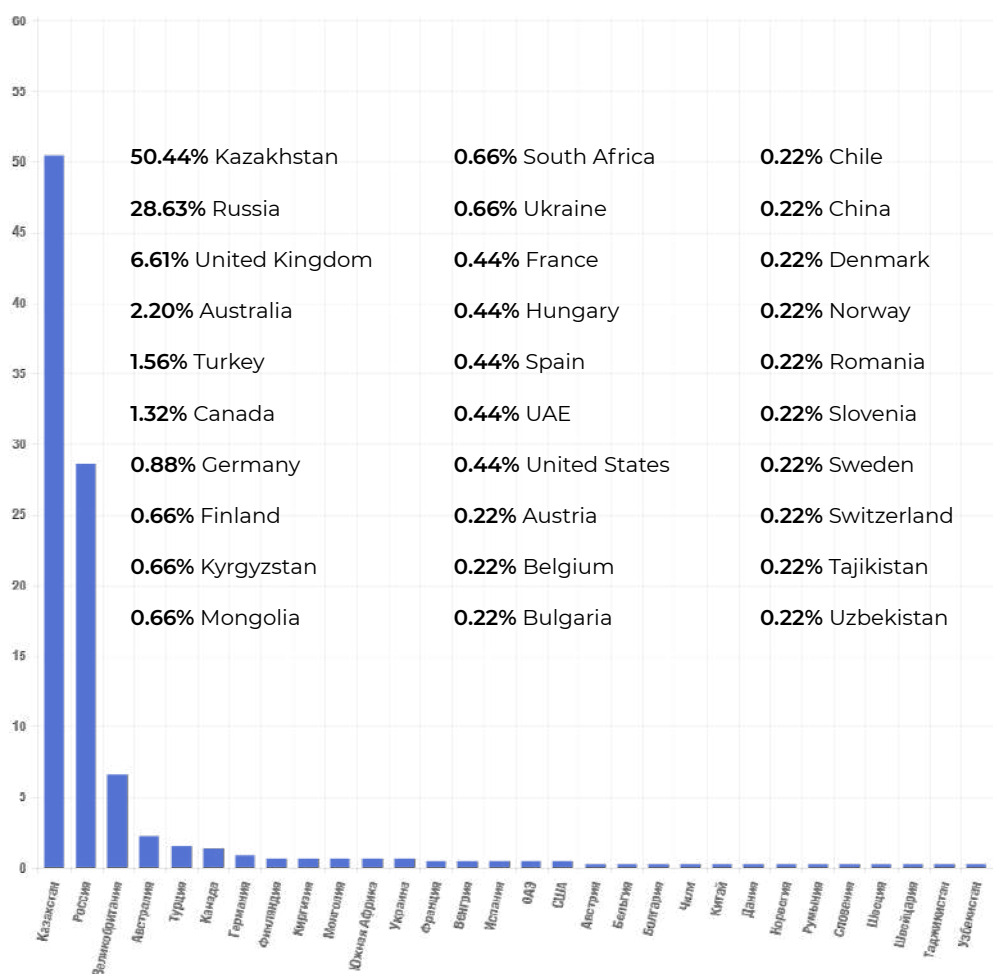
**7%** Other services



## GEOGRAPHICAL LOCATION OF IN-PERSON PARTICIPANTS

**30 countries were represented at the forum in Astana.**

More than half of the in-person participants of the forum live and work in Kazakhstan. Besides the local companies, the largest groups of participants were from Russia, the United Kingdom, Australia and Turkey.



## REMOTE PARTICIPANTS

The live broadcast of the main sessions of the Forum was watched by **149 viewers**. More than half connected from Kazakhstan, 20% from Russia and 8% from the UK. The rest of the viewers were from Afghanistan, Australia, Azerbaijan,

Bahrain, Bulgaria, Canada, Finland, Georgia, Germany, Mongolia, Norway, South Africa, Spain, Switzerland, Ukraine, the United States and Uzbekistan.



## EXHIBITING COMPANIES

**61 companies and organisations** from Kazakhstan, Russia, Great Britain, Australia, Finland, Mongolia, USA, Germany, New Zealand, Turkey and Canada presented at the exhibition, held within the framework of the Forum.

About a third of exhibiting companies specialize in the production and supply of equipment for geological prospecting,

extraction, processing and transportation of metals and minerals. The second-largest group of companies specialise in digitalisation and automation of production in the mining and metallurgical industry. The third-largest group of exhibitors provide services and equipment for mineral exploration, drilling and blasting operations.



- 42.6%** Equipment
- 21.3%** IT and mobile communication
- 13.1%** Exploration services
- 9.8%** Consulting
- 4.9%** Drilling services
- 3.3%** Testing and Certification
- 1.6%** Mining companies
- 1.6%** Environmental service providers
- 1.6%** Engineering companies



## EXHIBITION VISITORS

**509 in-person visitors** were registered at the exhibition. As admission to the exhibition did not require pre-registration, the number of visitors was higher and is estimated at about **600-700 people**.

Most of the registered visitors work at Kazakhstani and International mining and metallurgical enterprises, Equipment suppliers and Service sectors. The rest of the visitors work in government organisations, Universities, IT, Financial and Trading companies. The exhibition was also visited by foreign specialists from Russia, Turkey, the United Kingdom, Kyrgyzstan, Nigeria, China, France, Germany, Mongolia, the USA, Ukraine, and Uzbekistan.

**46%** Mining and Exploration companies

**14%** Companies providing geological technologies and services

**12%** Manufacturers and suppliers of equipment

**10%** Consulting companies

**4%** Financing and investments

**4%** IT and communication companies

**3%** NGOs and Academic Organisations

**4%** Government agencies and organisations

**3%** Other







## MINING GOES DIGITAL CONFERENCE

The 2nd Conference on Digital Transformation – Mining Goes Digital, held alongside the Forum, offers a cross-industry platform for the presentation and exchange of the experience of digital transformation of companies and government organisations operating in the mining industry. 18 companies presented project cases and technologies for the digitalisation of individual mines and the whole mining chains during the Conference.

## INDUSTRY COMPETITIONS

**Industry competitions organised alongside the Forum are open for Kazakhstani and foreign companies.**

For the second year in a row, the organisers of the Forum organised a competition of technologies for the digital transformation of mining and metallurgical enterprises – MineDigital. The competition is aimed at the companies that provide solutions for the digitalisation and automation of production processes in the mining and metals sectors ranging from the creation of digital cores to the construction of digital mine twins.

The objectives of the competition are to evaluate and present the most significant projects and technologies for digitalisation of geological, mining, and metallurgical enterprises of Kazakhstan in the period from 2021 to 2023.

This year, the competition was supported by **Alidada and Operex**.



The winners of the 2023 MineDigital competition are the following projects:

## GOLD MEDALIST

**Project:** Optimization of flotation cycle control at the Bakyrchik mining enterprise using artificial intelligence on the brains. app platform

**Project Representative:** Tairzhan Salykov, Head of Production and Technical Department, Polymetal Eurasia

## SILVER MEDALIST

**Project:** Real-time monitoring of particle size from each cyclone to optimize the production of pure metal in the grinding and beneficiation line

**Project Representative:** Esko Tahkola, Business Development Manager, Europe, CiDRA Minerals Processing

## BRONZE MEDALIST

**Project:** Geminex™ – Technological digital twin for concentrators and metals

**Project Representative:** Nikolay Polshin, Digital Solutions Expert, Metso Outotech, Central Asia

## INFORMATION AND NEWS PORTAL



In addition to organising events in Astana, the MINEX Kazakhstan 2023 Forum carried out an international educational and information mission.

To educate the global investment and trade community about business opportunities in Kazakhstan Mining and Mineral Exploration sector, **a non-profit information and news portal** was created on the forum's website.

News was selected from open sources and published on the **portal in 18 languages** <https://2023.minexkazakhstan.com/en/news-eng/>

During the three months before the start of the forum, 745 publications were posted on the portal.

The portal became the world's **first multilingual information source** dedicated to the Kazakh mining and metallurgical industry.

The total readership of the news section on the forum website exceeded **300,000**.

In March 2023, the secretariat of the MINEX Forum provided information coverage of the participation of the Kazakhstan

National delegation in the world's largest mining convention PDAC in Toronto, Canada.

The MINEX Forum conducted video interviews at the opening of the Kazakhstan national pavilion, which was created for the first time in the PDAC's 96-year history. The footage was handed over to the Khabar National Agency and broadcasted on nationwide TV news.

The MINEX Forum also prepared a video and an analytical review of Kazakhstan's investment events held in Toronto.

[The 1st Kazakh-Canadian Mining Forum](#)

[Kazakhstan session within the framework of the CECC Mining Conference](#)

[Kazakhstan Day at PDAC 2023](#)

**The portal will resume work in December 2023 on the website of the MINEX Kazakhstan 2024 Forum.**



## INDUSTRY SURVEY

### **A survey conducted at the MINEX Forum offered an insight into Kazakhstan's mining industry**

An interactive survey was organised in Astana on 19-20 April 2023 at the eight mainstream sessions of the MINEX Kazakhstan Mining and Exploration Forum. The results revealed trends, concerns, and expectations of the Forum participants in relation to the industry's state and future development. It should be noted that the MINEX Kazakhstan Forum is an independent event dedicated to the discussion of the prospects, challenges and successful practices in mineral resources management, investments and modernisation of mining and metallurgical complex of the Republic of Kazakhstan.

MINEX Kazakhstan 2023 has become the largest event since its inception in 2010. The Forum and onsite exhibition attracted more than 1000 participants from 30 countries, from 221 companies and organisations. The last time such a survey was conducted in 2019.

# SURVEY RESULTS

## SESSION 1

### «Creating a favorable business climate for sustainable development and investment in the mining industry»

More than half of the respondents (55%) believe that political and social stability have the greatest impact on the investment climate in the mining and geological industry in Kazakhstan.

16% of respondents associate successful investment projects with the creation of a favorable business climate, while 13% consider the discovery of new deposits to be the most significant factor.

Surprisingly only 6% of respondents associate the improvement of the investment climate with the fiscal policies. In the last few months heated debates have surrounded the increase in tax rates on the mineral extraction tax and insufficient stimulation of investment in geological exploration in the Republic. It is noteworthy that on the same day, 19 April, speaking at an the meeting of the Government on socio-economic development, President Kassym-Jomart Tokayev, proposed to introduce tax incentives for the development of solid mineral deposits. “The head of state stressed that due to current taxation, it is simply economically inexpedient and unprofitable to develop new deposits. And these are missed opportunities for cities, lost jobs and, in general, growth for the whole country”.



#### S1: Choose the most significant factor affecting investment climate in the mining and geological industry in Kazakhstan



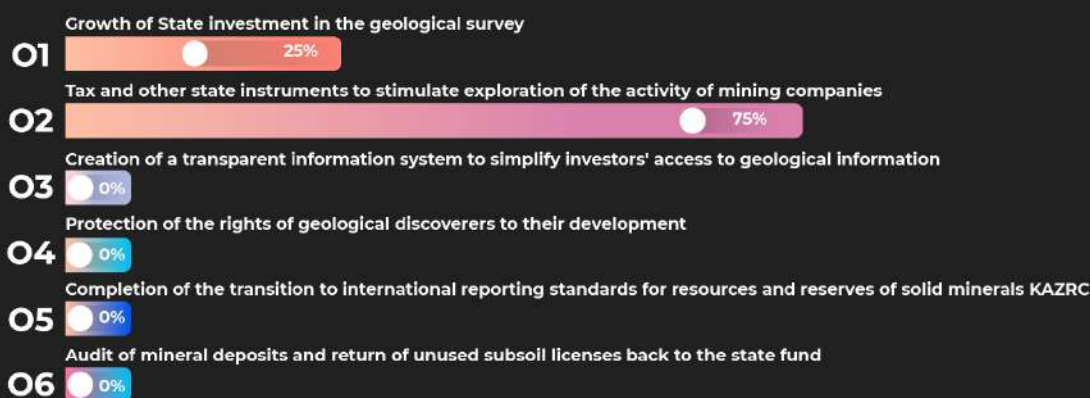
## SESSION 2

### «Priorities for the development of the geological industry in Kazakhstan»

When asked about the key driver of the development of mineral resources in Kazakhstan, 75% of respondents expectedly pointed out the need for tax incentives and other state incentives to support geological prospecting. The remaining 25% consider the participation of the state in the study of the subsoil to be a priority. Other factors, such as the creation of a transparent system to simplify investors' access to geological information or protection of discovery rights and their transition to mining licenses, survey participants consider of secondary importance.



#### S2: What, in your opinion, is a decisive factor for stimulating the development of mineral resources in Kazakhstan



## SESSION 3

### “Unlocking the mineral resource potential of Kazakhstan using advanced technological and investment solutions”

Opinions over the main driver for the development of the mining and geological industry were split.

The majority of respondents believe that external factors have the greatest impact on the development of the industry. Most respondents (66%) believe that global demand and commodity prices play a decisive role. Others believe that the development of the industry is determined by successful diversification and opening new markets.

The rest of the respondents (34%) identify growth with internal factors e.g., attracting investment, improving production efficiency, and developing human resources.

**S3: What is the main driver for the development of the mining and geological industry in Kazakhstan**



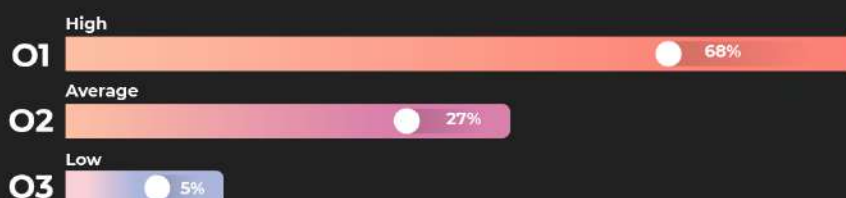
**SESSION 4**

**«Developing Kazakhstan’s Critical Metals and Materials Potential»**

Critical ores and metals – chromium, copper, germanium, lithium, rhenium, and others – are important building blocks for renewable energy technologies such as solar panels, wind turbines, and batteries. In terms of potential and exports of critical raw materials, Kazakhstan ranks fourth in the world. Kazakhstan accounts for almost half of the world’s uranium production. The Central Asian republic has large deposits of rare earth minerals. As the transition to green energy technologies continues to grow, Kazakhstan is well positioned to become a strategic supplier of battery metals and other critical materials to European and global markets.

The majority of respondents – 68% – believe that the country has the capability to relatively quickly develop the sustainable supply of critical metals and materials in the next 3-5 years. 27% of respondents believe that Kazakhstan will need more time. 5% are skeptical.

**S4: How do you assess the potential of Kazakhstan in expanding the production and export of critical metals and materials in the next 3-5 years**



## SESSION 5

### «Mining Digitalisation in Kazakhstan»

The 2nd Mining Goes Digital conference was held within the framework of the Forum.

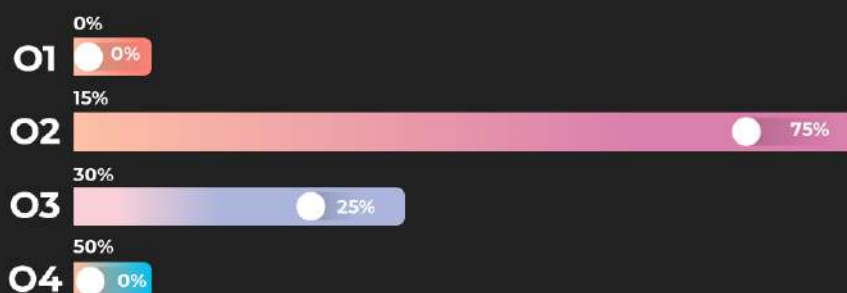
The key challenges facing the geological industry are slow reproduction of mineral reserves and low profitability due to an outdated production base. According to the 2015-16 estimates of the government of Kazakhstan, digital technologies can become a real driver for the development of the mining and metallurgical industry and bring economic benefits in the amount of 9 billion US dollars. However, an independent analysis of the level of digitalisation of mining enterprises in Kazakhstan conducted in 2017 revealed disappointing results. Many mining and processing and metallurgical plants were built in Soviet era times and continue to operate on outdated technology.

More than half of the mining enterprises at the time of the study were at the level of Industry 2.0 and did not have automated production systems. Despite these challenges, the situation is gradually improving with the introduction in 2017 of the state program “Digital Kazakhstan”, which aims to incorporate the elements of Industry 4.0 in all industries. Kazakhstan’s mining leaders have made advances in the digitalisation and automation of production chains. On average, Industry 4.0 technologies at the large enterprises account for 20% to 80% of existing production. Nevertheless, small and medium-sized businesses are well behind these indicators and have to catch up fast to remain competitive.

The majority of respondents (75%) believe that the level of digitalisation and automation in their companies does not exceed 15%. The remaining 25% of respondents work in enterprises where the level of digital transformation and automation has reached 30%.



**S5: MGD: How much of your company’s equipment, production and management processes digitalised or automatically controlled?**





## SESSION 6

### «Automation and digitalisation of mining assets management from pilots to the creation of single chains and digital twins»

Kazakhstan's mining and metallurgical industry plays a significant role in the country's economy, accounting for 17.5% of GDP and exporting about \$10.5 billion as of 2021. The industry employs more than 273,000 people, making it an important source of employment. However, the sector faces challenges due to outdated technology and management practices that date back to Soviet times.

The decisive stimulus for the digital transformation and automation of mining and metallurgy enterprises in Kazakhstan are the successful experience and clear economic indicators. This is the opinion of 71% of respondents. The rest of the respondents – 29% – associate digitalisation progress with the introduction of tax incentives and other Government support measures.



#### S6: MDG: What, in your opinion, is a decisive factor for stimulating the development of digital transformation of Mining enterprises in Kazakhstan?



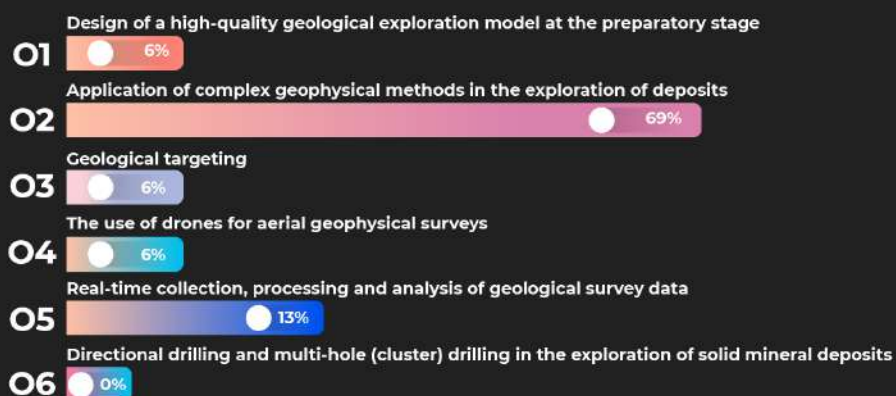
## SESSION 7

### «Efficient technologies for forecasting and exploration of mineral deposits»

Kazakh mining companies are taking significant steps towards the modernisation of the geological industry. Businesses are introducing innovative exploration methods to improve the quality of assessment of promising areas and determine the best methods for their development and production. Given the vast territories of Kazakhstan, the efficiency of geological forecasting and exploration largely depends on the use of advanced technologies, comprehensive analysis, and high competence of specialists.

69% of survey respondents believe that the use of complex methods in the exploration of mineral deposits gives the fastest and greatest economic effect. 13% associate the success of geological exploration with the use of cloud-based technologies that allow the collection and evaluation of data in real time. The rest of the participants attribute efficiency to geological targeting (6%) and the use of drones for airborne geophysical surveys (6%).

**S7: Which technology gives the best results in terms of speed and economic efficiency in the exploration of mineral and metals deposits in Kazakhstan?**



## SESSION 8

### «Green Transformation, Climate and ESG Management»

The mining and metallurgical industry is one of the three largest sources of greenhouse gas emissions. Green transformation, climate management and mining waste management are important to protect the environment and promote sustainable development. The transition to carbon neutrality will require huge investments in the creation of new products and energy technologies.

Kazakhstan is taking steps to promote sustainable development and green transformation. The country has committed to achieving carbon neutrality by 2060. To increase carbon sequestration, the state plans to accelerate the transition to renewable energy sources and plant two billion trees in the next five years. In addition, the new environmental code, which came into force in July 2021, makes adaptation to climate change a legal norm for sectoral and regional planning. It is expected that by 2025, the 50 largest companies, which account for 80% of emissions in Kazakhstan, will switch to the best available technologies.

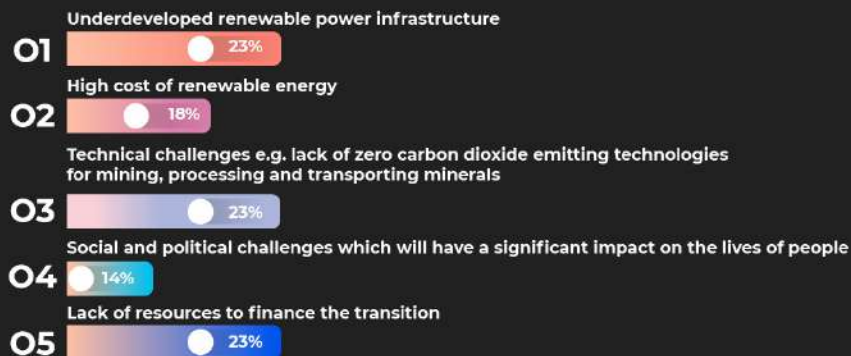
The survey didn't determine the most significant impediment for Kazakhstan's mining industry transition to carbon neutrality. This outcome was expected as the large-scale climate change initiatives in the country have been launched relatively recently and tangible changes are required in many areas.

23% of respondents believe that the underdeveloped infrastructure of renewable energy sources is the main detriment to climate change transition in the mining sector. The other 23% of participants consider technological problems to be a critical factor. Respondents refer to the lack of economically viable technologies for zero carbon dioxide

emissions for the extraction, processing, and transportation of minerals in Kazakhstan. Another 23% of respondents associate the problems with a lack of financial resources. 18% believe that the high cost of renewable energy sources is a “stumbling block” in the implementation of plans to “green” production. The remaining 14% believe that the main deterrent is the negative public mood, as the population is concerned that the transition to carbon neutrality will significantly affect their lives and well-being.



**S8: What is the main challenge for the transition to Zero carbon mining in Kazakhstan's?**



## HOW THE SURVEY WAS CONDUCTED

The survey was conducted anonymously. Prior to each session, a question with the multiple-choice answers was displayed on screens in the meeting room. Each participant opened the survey webpage using a QR code and selected the most appropriate answer. The results of the voting were calculated and displayed in real time on the screens and phones of the voters. The number and composition of survey participants varied at each session.

**THE NEXT SURVEY WILL TAKE PLACE AT THE 14TH MINEX KAZAKHSTAN MINING AND EXPLORATION FORUM IN ASTANA ON 17-18 APRIL 2024**

# UPCOMING MINEX FORUM EVENTS 2023-24



## EUROPE

20-22 September 2023,  
Krakow (Poland)

# 2023

[minexeurope.com](http://minexeurope.com)

**"Mining and Green Transformation in Central and Eastern Europe"**



## EURASIA

27 November 2023,  
London (United Kingdom)

# 2023

[minexeurasia.com](http://minexeurasia.com)

**"Investment opportunities in Europe, Central Asia and Mongolia"**



## KAZAKHSTAN

17-18 April 2024,  
Astana (Kazakhstan)

# 2024

[minexkazakhstan.com](http://minexkazakhstan.com)

**"Development of mineral resource potential and supply chains of critical materials"**

**WWW.MINEXFORUM.COM**

Please contact the secretariat to discuss participation  
in the MINEX Forums

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