Advancing Security and Transparency for the Governance of Critical Raw Materials in Central Asia

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Foreword

In recent years, the OECD has developed a substantial body of work on critical minerals within the framework of the **OECD Initiative on Critical Minerals for Sustainable Growth and Development** to promote secure, transparent, and inclusive mineral supply chains. This work integrates the OECD's expertise across trade, investment, ESG standards, development policy, and sustainability frameworks to strengthen supply chain resilience while supporting countries involved in mineral production and processing. It responds to the growing global demand for Critical Raw Materials (CRMs), which has brought renewed attention to regions with significant resource endowments. In this context, developments in and beyond Central Asia have highlighted the strategic importance of the region and the need for comprehensive mining sector strategies that support sustainable and responsible growth.

Kazakhstan, the Kyrgyz Republic and Uzbekistan have emerged as countries of particular relevance in this evolving landscape. In 2025, with support from the United Kingdom Foreign, Commonwealth and Development Office (FCDO), in the context of the UK cross-government Integrated Security Fund, the OECD launched a high-level policy dialogue on Critical Raw Materials with Central Asian countries, complemented by in-depth technical workshops focused on strengthening the framework conditions for CRMs development in Kazakhstan, the Kyrgyz Republic and Uzbekistan.

The OECD conducted country-specific workshops in all three countries, supported by consultations with relevant ministries and a dedicated ministerial session held during OECD Eurasia Week in February 2026. Throughout the project, analysis focused on three key policy areas: Responsible Business Conduct (RBC), environmental risk management and tax policy, while also integrating women's empowerment issues relevant to the mining sector. The work drew on the OECD's existing expertise in these fields, as well as on evidence collected through research and country-level engagement.

This report provides a regional overview of the mining sector in Central Asia and sets out OECD findings and actionable recommendations on environmental risk management, Responsible Business Conduct (RBC), and tax policy in Kazakhstan, the Kyrgyz Republic and Uzbekistan. The report is intended to support policy makers, business leaders and development partners seeking to foster a sustainable, responsible and competitive CRMs sector in the region.

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This report was prepared in the Eurasia Division of the OECD Global Relations and Co-operation Directorate (GRC), under the overall direction of Mr Andreas Schaal, Director and Mr Karim Dahou, Deputy Director of the OECD Global Relations and Co-operation Directorate, and with the guidance of Mr William Tompson, Head of the OECD Eurasia Division. The report was supervised by Mr Grégory Lecomte, Senior Policy Analyst and Head of the Central Asia Unit, and co-ordinated by Ms Céleste Laporte Talamon, Policy Analyst, OECD Eurasia Division.

The lead authors of this report are Mr Egor Polishchuk and Ms Mariam Chkhikvadze, Policy Analysts in the OECD Eurasia Division, with guidance and significant analytical support provided by Ms Céleste Laporte Talamon. The chapter “Setting the scene” benefited from analytical and statistical inputs of Ms Sara Grubanov-Boskovic, Policy Analyst, and Mr Cengiz Arikan, Statistician, both from the OECD Istanbul Centre. The chapter “Managing environmental risks in the CRMs sector” benefited from significant analytical inputs, drafting contribution and review of Ms Peline Atamer, Senior Policy Analyst and Head of the Sustainable Infrastructure and Green Growth Unit in the OECD Global Relations and Co-operation Directorate, as well as from the guidance and review of Mr Guy Halpern, Policy Analyst in the OECD Environmental Directorate. Mr Benjamin Katz, Sector Lead Analyst, Mr Luca Maiotti and Mr Andres Aponte, both Policy Analysts, from the OECD Centre for Responsible Business Conduct, provided guidance and analytical inputs to the chapter “Advancing Responsible Business Conduct (RBC) standards in mineral supply chains”. The chapter “Fiscal Risks and Tax Policy Challenges in Central Asia’s CRMs Sector” was drafted by Mr Tomas Balco and Mr Andrew Viola, Senior Advisers, and Ms Jessica Rankin-Dixon, Junior Adviser, in the OECD Centre for Tax Policy and Administration (CTP) and Mr Nicholas Dluzniak, Tax Inspectors Without Borders (TIWB) Expert. It was subsequently developed and integrated into the present report by the OECD Eurasia Division team. Ms Anna Chahtahtinsky, Programme Administrator, Ms Jolanta Chmielik, Resource Management Advisor and Ms Elisa Larrakoetxea, Project Administrator in the OECD Eurasia Division, provided unfailing administrative, logistical and editorial support.

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Table of contents

Foreword 3

Acknowledgments 4

Acronyms and abbreviations 9

Executive summary 12

1 Setting the scene 15
- Economic context 16
- Connectivity and trade profile by country 18
- The potential for CRM mining in Central Asia 22
- State ownership in mining activities remains dominant across the region 26
- Openness to foreign partnerships and investment varies across the region 27
- Latest reforms in the mining sector by country 29
- Gender in mining 31
- Policy considerations 34
- Report outline 36
- References 37
- Annex 1.A. Main mining projects in Central Asia 47
- Annex 1.B. CRM endowments in Central Asia 49

2 Advancing Responsible Business Conduct (RBC) standards in mineral supply chains 53
- Introduction 54
- Governance in Central Asia's mining sector 58
- Labour rights 63
- Meaningful engagement of local communities 64
- References 68
- Note 73

3 Managing environmental risks in the CRM sector 75
- The alignment of mining practices with environmental and broader sustainability goals will be pivotal as governments advance their CRM agendas 76
- Keeping levels of greenhouse gas emissions aligned with climate goals 78
- Addressing water stress and pollution 85
- Managing mining waste and tailings 90
- References 94

Annex 3.A. Strategic plans relevant to GHG emissions 102
Annex 3.B. Legislation relevant to GHG emissions 104
Annex 3.C. Legislation and strategic plans relevant to water resources 105
Annex 3.D. Legislation and strategic plans relevant to waste and tailings 108

4 Base Erosion and Profit Shifting tax risks in the CRM sector 111
Base Erosion and Profit Shifting risks in the CRM sector 112
High-level legislation gap analysis and recommendations 118
Country-level gap analysis 122
Opportunities and risks in the context of attracting the investment into critical raw materials sector 129
Conclusion 131
References 131

FIGURES

Figure 1.1. Real GDP growth (2014-2024) 16
Figure 1.2. Central Asia's trade partners 21
Figure 3.1. Production-based CO_2 productivity (2017-2024) 79
Figure 3.2. Energy intensity to GDP per capita, 2022 79
Figure 3.3. Share of recycled, incinerated and landfilled hazardous waste in total hazardous waste generated 92

TABLES

Table 1.1. Central Asia’s endowment with Critical Raw Materials 23
Table 1.2. Employment in mining and quarrying in the Kyrgyz Republic by occupation (ISCO-1) and gender, 2022 (%) 33
Table 1.3. Employment in mining and quarrying in the Kyrgyz Republic by occupation (ISCO-1) and gender, relative to total gender percentage, 2022 (%) 33
Table 4.1. Revenue impacts from the under-pricing critical minerals 113

Annex Table 1.A.1. Main on-going mining projects in Central Asia 47
Annex Table 1.B.1. Kazakhstan’s CRM endowments 49
Annex Table 1.B.2. The Kyrgyz Republic’s CRMs endowments 50
Annex Table 1.B.3. Uzbekistan’s CRM endowments 50
Annex Table 3.A.1. Strategic plans relevant to GHG emissions 102
Annex Table 3.B.1. Legislation relevant to GHG emissions 104
Annex Table 3.C.1. Legislation and strategic plans relevant to water resources 105
Annex Table 3.D.1. Legislation and strategic plans relevant to waste and tailings 108

BOXES

Box 1.1. Gold mining in Central Asia 18
Box 1.2. The potential of the Trans-Caspian Transport Corridor (TCTC) as a reliable route for CRM transport 20
Box 1.3. Automated hiring tools for a fairer recruitment process: the “Applied” platform 36
Box 2.1. The Extractive Industries Transparency Initiative (EITI) 56
Box 2.2. The National Contact Point (NCP) in Kazakhstan 58
Box 3.1. Chile’s climate framework for the mining sector 82
Box 3.2. Mine water use in Kazakhstan: the case of a copper mine (MineX) 87
Box 3.3. Central Asia Metals PLC at the Kounrad copper mine in Kazakhstan 94
Box 4.1. BEPS Action 4 report 116
Box 4.2. BEPS Action 2 report 117

Box 4.3. OIT schemes – the case of Petrotech 118
Box 4.4. Legislative options to address OIT schemes 118
Box 4.5. Transfer Pricing Documentation 121

Acronyms and abbreviations

ADB	Asian Development Bank
AMMC	Almalyk Mining and Metallurgical Combine
ASGM	Artisanal and Small-Scale Gold Mining
BEPS	Base Erosion and Profit Shifting
BOD	Biological Oxygen Demand
BTC	Baku-Tbilisi-Ceyhan
CAHRAs	Conflict-Affected and High-Risk Areas
CbCR	Country-by-Country Reporting
CIM	Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and Mineral Reserves
CIT	Corporate Income Tax
CKU	China-Kyrgyzstan-Uzbekistan railway
CMA	Critical Minerals Association
COD	Chemical Oxygen Demand
CO_2	Carbon dioxide
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
CRMs	Critical Raw Materials
CSR	Corporate and Social Responsibility
CUP	Comparable Uncontrolled Price
DO	Dissolved Oxygen
DRC	Democratic Republic of Congo
EBITDA	Earnings before interest, taxes, depreciation and amortisation
EBRD	European Bank for Reconstruction and Development
EDD	Enhanced Due Diligence
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EITI	Extractive Industries Transparency Initiative
ERG	Eurasian Resources Group
ERMA	European Raw Materials Alliance
ESG	Environmental, Social and Governance
ETS	Emissions Trading System
ETMs	Energy Transition Metals
EU	European Union
EUR	Euro (€)
FDI	Foreign Direct Investment
FIC	Uzbekistan's Foreign Investors Council
GDL	Good Delivery List
GDP	Gross Domestic Product
GHG	Greenhouse gases
GISTM	Global Industry Standard on Tailings Management

GKZ	State Commission for Mineral Reserves (Russia)
GPP	Green Public Procurement
GRI	Global Reporting Initiative
IEA	International Energy Agency
IFC	International Finance Corporation
IFRS	International Financial Reporting Standards
IGF	The Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
ILO	International Labour Organisation
ISO	International Organization for Standardization
ITID	OECD Investment Tax Incentives Database
IWiM	International Women in Mining initiative
JORC	Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves
KAZRC	Kazakhstan's Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves
KyrRC	Kyrgyz Republic's CRIRSCO-aligned reporting system
kWh	Kilowatt-hour
LBMA	London Bullion Market Association
MAAC	Multilateral Convention on Mutual Administrative Assistance in Tax Matters
MNE	Multinational Enterprise
MRV	Monitoring, Reporting and Verification
NAP BHR	National Action Plan for Business and Human Rights
NCP	National Contact Point for Responsible Business Conduct
NDC	Nationally Determined Contribution
NGO	Non-governmental organisation
NGS	National Geological Survey
NMMC	Navoi Mining and Metallurgical Combine
NZE	Net-Zero Emissions
OEC	Observatory of Economic Complexity
OECD	Organisation for Economic Co-operation and Development
OECD TPG	OECD's Transfer Pricing Guidelines
OIT	Offshore indirect transfer
PCT	The Platform for Collaboration on Tax
PERC	Pan European Reserves and Resources Reporting Committee
PPP	Public-Private Partnership
RBC	Responsible Business Conduct
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SIA	Social Impact Assessment
SOE	State-owned enterprise
SSU	Subsoil and Subsoil Use
STEM	Science, Technology, Engineering and Mathematics
TCTC	Trans-Caspian Transport Corridor
TDS	Total Dissolved Solids
TIWB	Tax Inspectors Without Borders
TSF	Tailings Storage Facility
WPI	Water Pollution Index
UK	United Kingdom
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNFC	United Nations Framework Classification for Resources
US	United States
USD	US Dollar ($)

UzTMK	Uzbekistan Technological Metals Complex
WRI	World Resources Institute
WPI	Water Pollution Index

Executive summary

Central Asia's critical mineral potential is significant but largely untapped

Kazakhstan, the Kyrgyz Republic and Uzbekistan hold considerable reserves of critical raw materials (CRMs), particularly hard minerals. As global demand for critical minerals is expected to rise significantly in the coming years, the mining industries inherited by the three countries from the Soviet era represent a major asset to be leveraged for sustainable and dynamic growth.

Central Asia holds 39% of global manganese ore reserves, 31% of chromium, 20% of lead, 13% of zinc, 9% of titanium, 6% of aluminium, 5% of copper, 5% of cobalt and 5% of molybdenum. Kazakhstan, already the world's largest uranium producer, can export 21 of the 34 CRMs in the official EU list; the Kyrgyz Republic holds the world's third-largest reserves of antimony, while Uzbekistan holds the world's eleventh largest copper reserves and has started developing lithium and molybdenum production.

However, the region's mining sector is far from realising its full potential, due to limited exploration, outdated geological data reporting and regulatory challenges. Potential investors lack reliable and up-to-date data on resource endowments, owing to a lack of geological exploration since independence and the use of legacy reserves reporting systems. The predominance of domestic state-owned enterprises (SOEs) in the sector and past disputes with foreign investors have also discouraged investment.

However, recent developments are encouraging. New data collection, the transition to global standards for reserves reporting and updates in legal frameworks signal a willingness to attract foreign investment to the sector. Central Asian governments see critical minerals as a new growth and diversification engine, not only in extraction but increasingly in processing and related value-chain activities. Amendments to labour laws, in particular in relation to female employment, offer new opportunities to increase inclusion.

Responsible Business Conduct standards and practices are being adopted more and more, but SOE footprint and due diligence remain points of attention

Awareness of Responsible Business Conduct (RBC) is growing in Central Asia's mining sector, with Kazakhstan, the Kyrgyz Republic, and Uzbekistan adopting international standards to address corruption, strengthen due diligence and labour safety requirements, and enhance community involvement, albeit at varying speeds and in varying ways. However, implementation challenges remain, especially regarding government-SOE separation, labour rights, and local community participation.

In all three countries, the mining sector is dominated by a small number of SOEs. This raises several issues. First, some SOEs play quasi-regulatory roles when controlled by ministries that combine policy, regulatory and ownership functions, which can give rise to conflicts of interest, as ministry officials may hold positions in companies they regulate. The lack of transparency in public procurement and corruption also remain important issues and fuel distrust between stakeholders involved in mining projects.

Nevertheless, governments are working to address corruption and strengthen stakeholder dialogue in the mining sector, notably through the Extractive Industries Transparency Initiative (EITI) membership. Initial steps are underway to integrate Environmental, Social and Governance (ESG) principles into national legislation. Governments and SOEs are taking measures to better assess, prevent, mitigate and address adverse impacts and risks associated with mining activities.

Insufficient oversight of occupational health and safety continues to result in a high incidence of accidents on mining sites. Moreover, while local community engagement in mining projects may be legally required, in practice those provisions are not always effectively applied. Local populations often complain that they are excluded from consultations about the impacts and risks of mining operations, and there is an absence of clear guidelines on compensation and resettlement for affected communities.

Governments are enhancing environmental risk management in mining, but goals could be more sector-specific and integrate the whole mining lifecycle

The three countries have adopted economy-wide strategies to accelerate GHG emissions reduction and decarbonise their most carbon-intensive sectors, but these strategies are not sector-specific. Some provisions in the strategies target the mining sector or large mining companies, but there is a general lack of mining-specific targets in terms of GHG emissions and pollution. The same is true of provisions on water and waste management, which are mostly designed at the national level.

All three countries have developed legal frameworks for the environmental assessment and expertise of mining projects, as mining exacerbates environmental issues such as land degradation, greenhouse gas emissions, water pollution and stress, biodiversity loss, and hazardous waste. These frameworks often include provisions on Strategic Environmental Assessments (SEA) as well as Environmental Impact Assessments (EIA). Mining laws also require impact assessment and pollution prevention, but practical enforcement, wastewater monitoring and incentives for water-saving or circular systems remain limited.

Legacy mining waste and tailings also require specific attention, as the region hosts many legacy tailings storage facilities and dumps, some of which contain hazardous waste. As uranium producers, the three countries face risks of radioactive contamination for local communities and ecosystems. The management of legacy mining waste and tailings should remain a key part of future mining strategies as CRMs mining develops.

CRMs offer an opportunity to strengthen domestic revenue mobilisation but closer alignment with international tax policy and BEPS standards are needed

The CRMs sector builds on the extractive industries' long-standing role in domestic revenue mobilisation in all three countries. Yet it remains exposed to tax practices by multinational entities that undermine public revenues. The sector is particularly vulnerable to Base Erosion and Profit Shifting (BEPS) practices, including the under-pricing of related-party mineral exports, uncommercial intra-group financing that shifts profits via interest deductions, and offshore indirect transfers (OITs) of mining licences, allowing capital gains to escape taxation.

Kazakhstan, the Kyrgyz Republic and Uzbekistan are gradually aligning aspects of their tax policy frameworks with international standards. However, existing legislative loopholes, ranging from permissive pricing rules and ineffective interest-limitation regimes to legislative inability to tax offshore licence transfers, continue to allow legal profit shifting and undermine domestic revenue mobilisation.

Governments are strengthening tax administration and international co-operation to better detect and address tax risks in the CRMs sector. Training, technical assistance, and participation in international initiatives, such as the one led by the OECD and Tax Inspectors without Borders (TIWB), have helped

develop risk-assessment tools and audit capacity, especially in Kazakhstan and Uzbekistan. Further progress will depend on continuing to align their international tax frameworks with best practice and investing in specialised tax administration capacity to ensure effective rule enforcement.

1 Setting the scene

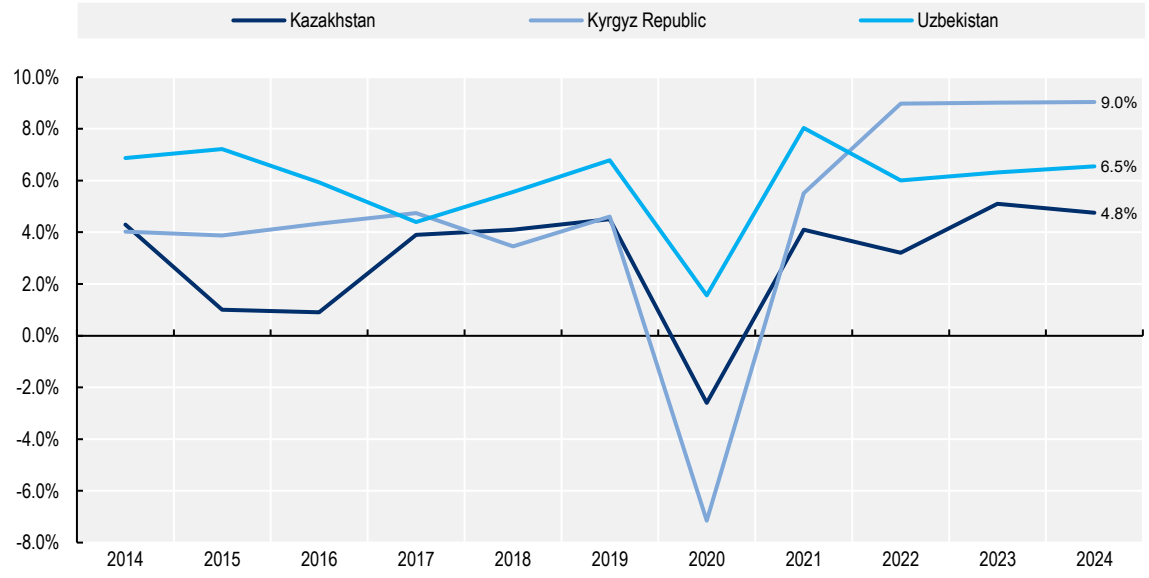
Central Asia is well endowed with Critical Raw Materials (CRMs); however, this potential remains largely untapped. The mining sector in the region has traditionally been dominated by a few state-owned enterprises (SOEs), but is gradually opening to foreign investment, and this creates the opportunity for the development of a dynamic, higher value-added CRM sector. Nevertheless, limited geological mapping, the lack of harmonisation in reserves reporting and past disputes with foreign investors make new investment harder to attract. Connectivity bottlenecks, the environmental impacts of mining activities, labour rights issues and gender inequality remain major challenges for Central Asia's mining sectors.

Economic context

Latest economic developments in Central Asia

Central Asia has been one of the fastest growing regions in the world in recent years. Kazakhstan, the Kyrgyz Republic and Uzbekistan experienced a sharp recovery following the COVID-19 pandemic, with the region quickly returning to its previous growth trajectory and outperforming projections (IMF, 2025[1]). This recovery, and subsequent growth, were largely supported by strong domestic demand, including infrastructure investments, rising real wages, and a rebound in the services and industrial sectors.

Figure 1.1. Real GDP growth (2014-2024)



Source: (IMF, 2025[2])

The three countries inherited substantial mining industries and discovered deposits at independence

In Kazakhstan, the metals mining sector contributed 12.1% of GDP in 2024 (AIFC, 2025[3])**; the main mining products include uranium (of which Kazakhstan is the world's largest producer), aluminium, iron, gold, copper, lead and zinc** (Grata International, 2025[4]) (World Nuclear Association, 2025[5]). It holds more than 200 mineral production sites (Vakulchuk, 2021[6]), and 38 new mineral deposits were discovered in 2025 alone (Kazinform, 2025[7]). The country is rich in rare earth elements and is the largest producer of uranium in the world, accounting for 40% of total production (World Nuclear Association, 2025[5]). Kazakhstan can currently export 21 out of the 34 CRMs outlined in the official EU list. The country possesses the world's largest reserves of chromium, the seventh largest zinc reserves, and the eighth largest lead reserves. It stands among the first 20 countries for copper, cadmium and bauxite (Vakulchuk, 2021[6]) (AIFC, 2025[3]). The government also expects to produce 15% of the world's graphite market through the development of the Sarytogan graphite mining site (Annex 1.B).

In the Kyrgyz Republic, the mining sector accounted for 2% of GDP in 2023, the main mining industries being gold and coal (Grata International, 2025[8]). However, the gold industry is classified as

manufacturing in national statistics, which may explain this relatively low share. Nevertheless, estimates indicate that mining, particularly gold mining, accounts for nearly 13% of GDP and over 60% of exports (World Bank, 2023[9]). Mining and metals are also the sectors attracting the largest volumes of foreign direct investment (FDI) into the country (World Bank, 2025[10]). The Kyrgyz Republic possesses substantial reserves of antimony, copper, iron and uranium, among other minerals. China's current ban on antimony exports has opened opportunities for the Kyrgyz Republic, which holds 13% of the world's antimony reserves (Carnegie Endowment, 2025[11]) (Annex 1.B).

In Uzbekistan, mining represented 17% of GDP in 2023, with the dominant industries being gold, copper and uranium (Grata International, 2025[12]) (Government of the Republic of Uzbekistan, 2023[13]). The country is endowed with the world's 11th largest copper reserves, as well as substantial reserves of silver, molybdenum, selenium and lithium (Vakulchuk, 2021[6]), which are key to Uzbekistan's affirmation as a top investment destination. The country is also one of the main gold exporters and the fifth largest uranium supplier in the world (World Nuclear Association, 2025[14]) (Annex 1.B).

Box 1.1. Gold mining in Central Asia

Central Asia's abundant natural resources, including its substantial gold deposits, became an integral component of the Soviet Union's mineral resource base. Since independence, gold has remained a cornerstone of the economies of Kazakhstan, the Kyrgyz Republic, and Uzbekistan, albeit with varying degrees of macroeconomic dependence. Its importance has intensified over time, not only as a key source of export revenues, industrial output and strategic reserves, but also due to its role in modern electronic and digital technologies, where it functions as a highly efficient, corrosion-resistant conductor of electricity.

- Kazakhstan ranks 14th globally in terms of gold production. Notably, most of the deposits currently mined were either already in operation during Soviet times or discovered during that period.
- In the Kyrgyz Republic, gold has become the central focus of the mining sector since independence. In 2020 its largest mine, Kumtor, accounted for approximately 11% of GDP and 52% of total industrial output.
- In Uzbekistan, gold mining began in the late 1960s with the development of the Muruntau deposit, one of the world's largest gold reserves. Gold continues to play a prominent role in the country's export basket: in 2023, gold accounted for approximately $8.1 billion or 33.4% of total exports, and this share increased to 41.7% in early 2024.

Gold mining is increasingly relevant to the CRM agenda, as many gold deposits also contain valuable co- or by-product minerals essential for clean energy, electronics and defence technologies. In addition to gold, these deposits may host recoverable elements such as antimony, tellurium, cobalt, tungsten, arsenic, manganese and in some cases zinc and silver. Historically, mining activities have focused mainly on gold extraction, leaving these associated minerals largely unexploited and often discarded in waste rock and tailings. However, with advances in tailings processing and trace-element accounting, such by-products can now be recovered economically. This enables existing gold mines to evolve into multi-mineral operations, supporting domestic CRM supply without the need to develop entirely new mines.

Source: (The Astana Times, 2025[15]), (World Bank, 2023[16]), (World Bank, 2023[9]), (The Times of Central Asia, 2025[17]), (Energy Research & Social Science, 2026[18]), (The Times of Central Asia, 2024[19]), (Resource World Magazine, 2020[20]), (U.S. Geological Survey, 2025[21])

Connectivity and trade profile by country

Central Asian trade remains dependent on a few commodities and partners

Central Asia's concentrated exports reinforce the need for trade-partner diversification. Central Asian countries currently present a rather undiversified export profile, each country being dependent on the export of one or two commodities (oil and gold for Kazakhstan; gold for the Kyrgyz Republic and Uzbekistan). They also export a range of metals and CRMs, including copper, aluminium, ferroalloys, and various metallic ores. Current export patterns indicate that trade in metals and CRMs remains largely oriented towards China, Russia and Türkiye, while the EU also serves as a destination for some of these materials, notably uranium and aluminium from Kazakhstan and Uzbekistan (OEC, 2025[22]) (Euratom Supply Agency, 2025[23]). Diversifying export profiles and strengthening participation in global value chains will depend on the development of efficient and secure transport links connecting Central Asia with a wider range of global markets (Box 1.2).

CRMs are mainly transported by road and rail

CRMs leaving Kazakhstan, the Kyrgyz Republic and Uzbekistan are mainly shipped by land, with rail carrying the heaviest flows where networks are strong and road freight filling gaps where they are not.

Kazakhstan's CRM logistics are strongly rail-centred: Kazakhstan Temir Zholy reported transporting over 122 million tonnes in January-June 2024, including large bulk mineral categories (e.g. iron ore and manganese; non-ferrous ore and sulphur) and increased oil transport. At the same time, rail freight with China reached a record 32 million tonnes in 2024, with ores and metals being primary exported cargo (The Times of Central Asia, 2024[24]) (Interfax, 2025[25]). Kazakhstan's freight system still reflects its Soviet industrial legacy, which was tailored to transporting bulk raw materials: coal, ore, grain and chemicals, by rail in conventional wagons. As a result, only around 11% of freight stations are currently equipped to handle containers, limiting the expansion of containerised mineral and metal exports (The Times of Central Asia, 2025[26]).

In the Kyrgyz Republic, freight transport is road-dominated: in 2024, 82.1% of total freight volumes were carried by road. Mineral exports rely predominantly on truck-based cross-border movements rather than organised wagonload rail corridors (stat.gov.kg, 2025[27]).

From Uzbekistan, CRM-related exports, particularly toward the European Union, are increasingly structured around rail and multimodal corridors. In the first nine months of 2023, railway shipments accounted for 44% of physical imports from Uzbekistan to the EU, compared to 36% by road and 16% by sea. Bulk mineral commodities and fertilisers show particularly strong rail intensity: potash fertiliser deliveries by rail increased from 7.6 to 62.9 thousand tonnes, and nitrogen-based fertilisers rose from 35 to 44 thousand tonnes, with specialised freight wagons used for bulk transport. Metal products are distributed across modes, with 63% transported by road and 36% by rail in 2022 (ERAI, 2023[28]).

At the regional level, international rail freight in Kazakhstan, the Kyrgyz Republic and Uzbekistan is conducted under the Agreement on International Goods Transport by Rail (SMGS) within the framework of the Organisation for Co-operation of Railways, of which all three countries are members (OSJD, 2026[29]). National regulations operate alongside this framework. In Kazakhstan, for instance, materials such as lithium, cobalt, manganese, chrome, copper, nickel, lead, zinc and molybdenum ores are explicitly classified as bulk cargo under rail freight rules, while materials classified as dangerous or valuable (notably gold) are subject to stricter containment, packaging and documentation requirements (Ministry of Justice of the Republic of Kazakhstan, 2019[30]).

Box 1.2. The potential of the Trans-Caspian Transport Corridor (TCTC) as a reliable route for CRM transport

Central Asian countries are working to offset their landlocked geography and better integrate into global value chains. The Trans-Caspian Transport Corridor (TCTC), which connects Europe and China through Central Asia, the Caspian Sea, the Caucasus and Türkiye, offers Central Asia the opportunity to not only become a major transit hub but also to increase its own trade volumes. The TCTC has gained renewed importance since Russia's full-scale invasion of Ukraine; in 2024, traffic along the corridor increased by around 62% as exporters sought reliable East-West trade alternatives. Before the full-scale invasion, the corridor already served as an alternative route for exports of some CRMs and hydrocarbons to Western markets. Kazakhstan in particular has long relied on the corridor for its grain, oil, minerals and uranium exports: in 2023, about 64% of Kazakhstan's uranium exports to Western markets were transported via the TCTC. Since 2022, the country has also increased its oil exports along the TCTC, using the well-established Baku-Tbilisi-Ceyhan (BTC) pipeline connection.

However, the development of the TCTC still faces multiple challenges, including insufficient multimodal infrastructure and the lack of regional harmonisation of national border-crossing procedures. The European Union has prioritised the development of the corridor to strengthen East-West supply chain resilience, including for the transport of CRMs. The OECD published a comprehensive report 'Enhancing the Competitiveness of the Trans-Caspian Transport Corridor in Central Asia', which assesses recent developments along the TCTC and provides tailored policy recommendations to strengthen its efficiency, predictability and regional integration potential.

Source: (OECD, 2025[31]), (ADB, 2024[32]), (The Astana Times, 2024[33]), (The Times of Central Asia, 2025[34]), (DGAP, 2025[35]), (European Commission, 2025[36]), (EIB, 2025[37]) (EEAS, 2025[38]).

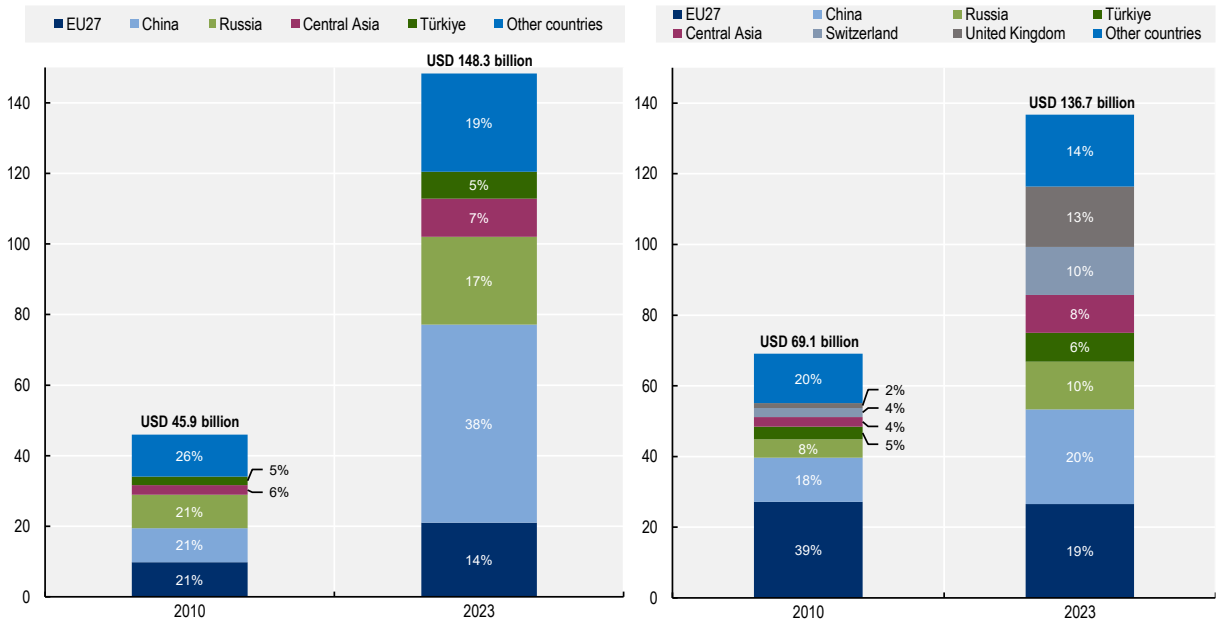
Central Asian exports are rising while China is becoming the region's main trade partner

Growth in Central Asia has been driven, among other factors, by a significant rise in exports: from 2010 to 2023, exports increased more than threefold, from USD 45.9 billion to USD 148.3 billion. In 2023, China was the main destination of Central Asian exports (20%), just ahead of the EU (19%). The United Kingdom and Switzerland, both major gold importers, represented, respectively, 13% and 10% of Central Asian exports that year, while Russia remained an important export partner with a 10% share.

China has become Central Asia's main import partner. In 2010, the EU, Russia and China each represented 21% of Central Asia's imports. In 2023, China represented 38%, while Russia's and the EU's shares declined to 17% and 14%, respectively. Given that Central Asian imports almost doubled between 2010 and 2023, China's role in Central Asia's trade has increased considerably (see Figure 1.2).

Figure 1.2. Central Asia's trade partners

Percent, import sources (left), export destinations (right)



Note: In this graph, Central Asia covers the five countries: Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.
Note: Russia has not published its trade statistics since 2022.
Source: (OEC, 2025[22])

Kazakhstan's trade relies on oil and gold exports, with China and the EU being the country's main trade partners

Kazakhstan's exports are dominated by crude oil and gold, which represented 36.5% and 19.9%, respectively, of the country's exports in 2023. This concentration exposes the economy to risks associated with oil price volatility, as observed in 2015-2016, when a prolonged decline in oil prices reduced export revenues, investment returns and budget income (OECD, 2021[39]). The country's main export partners in 2023 were the EU (26% of exports), China (16%) and the UK (16%). China remained Kazakhstan's leading import partner (31.2% of imports), followed by Russia (23.5%) and the EU (18%). Beyond hydrocarbons and gold, Kazakhstan also exports metals, such as copper, ferroalloys, aluminium, zinc and titanium, which display varying levels of integration with the European market. Exports to Europe account for approximately 7.7% of Kazakhstan's total refined copper exports, 15.1% of ferroalloy exports, 29.7% of raw aluminium exports, 9.3% of raw zinc exports, and 59.6% of titanium exports. Uranium exports, in particular, hold increasing strategic significance: Kazakhstan was the second-largest source of uranium delivered to EU utilities in 2024, accounting for 24% of total deliveries to the EU, an increase of 11% compared with 2023 (Observatory of Economic Complexity, 2025[40]) (Euratom Supply Agency, 2025[41]).

The Kyrgyz Republic mainly relies on gold exports, thus being exposed to price volatility

The Kyrgyz Republic's exports are dominated by gold, which represented 38.4% of the country's total exports in 2023. As for Kazakhstan, this overreliance exposes the country to market price volatility. The main export partners in 2023 were Switzerland (29% of exports), Russia (19%) and Kazakhstan (15%), reflecting a one-off gold purchase by Switzerland (76% of the Kyrgyz Republic's gold exports) and possible

re-exports to Russia. On the imports side, China accounted for 60.1% of Kyrgyz imports in 2023, underlining its major role in the country's trade and economy. The Kyrgyz Republic also exports small quantities of metallic and mineral commodities to Europe, although their export values remain modest. In 2023, around 58% of its scrap-iron exports were destined for the EU, 11% of scrap-aluminium exports went to Italy and all tungsten exports went to Germany (Observatory of Economic Complexity, 2025[42]).

Uzbekistan's trade profile is dominated by gold exports, resulting from its recent decline in gas exports

Uzbekistan's export profile went through a major shift towards gold exports in recent years (Observatory of Economic Complexity, 2025[43]). In 2018, gas and gold were the country's main export products, representing, respectively, 23.3% and 23.6% of total exports. However, Uzbekistan's gas industry experienced a significant decline between 2018 and 2023, mainly due to the depletion of existing gas reserves. By 2023, gold represented 45.6% of exports, while gas accounted for only 2.19%. This shift is reflected in the rise of Switzerland and the UK as the country's first and third export partners in 2023, respectively. Both are major gold importers, accounting for 73% and 23%, respectively, of Uzbekistan's total gold exports. On the imports side, China and Russia traditionally remained the two largest import sources for Uzbekistan, respectively representing 32.3% and 16.6% of total imports in 2023.

Uzbekistan also exports some metals and minerals, including CRMs, to Europe. In 2024, Uzbekistan was the source of approximately 2% of all uranium delivered to the EU. In 2023, roughly 8% of its raw zinc was exported to European countries, although these flows make up only a small share of Uzbekistan's total exports (Euratom Supply Agency, 2025[41]), (Observatory of Economic Complexity, 2025[43]).

The potential for CRM mining in Central Asia

Critical Raw Materials are indispensable for a wide range of strategic sectors

Critical Raw Materials are materials which are intensely used in technologies central to the green and digital transition (OECD, 2023[44]) **as well as to AI, robotics, defence, and are characterised by a high risk of supply chain disruption.** These materials are indispensable for wind turbines, solar panels, electric vehicles, energy storage batteries, smartphones, computers and 5G networks. Defence and aerospace industries also require large quantities of CRMs, making the latter crucial for a wide range of strategic sectors. Under the IEA Net-Zero Emission scenario, demand for CRMs will be multiplied by 16 in 2050 compared to 2020 (Liang, 2023[45]). Recent OECD findings point out that the current global CRM supply is failing to meet increasing demand (OECD, 2024[46]), which creates opportunities for CRM-endowed economies to increase production and stimulate growth.

Central Asia is well endowed with CRMs, but this potential is yet to be leveraged

Central Asia possesses large reserves of CRMs (Table 1.1). The region holds 39% of global manganese ore reserves, 31% of chromium, 20% of lead, 13% of zinc, 9% of titanium, 6% of aluminium, 5% of copper, 5% of cobalt and 5% of molybdenum (Vakulchuk, 2021[6]). This endowment positions the region as a potentially crucial supplier for the global energy transition and technology industries, but it remains largely untapped. Extractives exports from the region continue to be dominated by hydrocarbons (oil, gas, coal) and gold, the latter having historically played a significant role in the development of Central Asian economies (Box 1.1). Other mineral industries, while being fairly developed for metals like copper, aluminium, uranium and zinc, remain rather secondary in the region's export profile.

Table 1.1. Central Asia's endowment with Critical Raw Materials

Name	KAZ	KYG	UZB	Usage
Aluminium	+	+	+	Solar and wind frames
Antimony		+		Batteries, semiconductors
Arsenic	+	+		Semiconductors, photovoltaics
Barite	+	+		Shielding materials for clean energy tech
Beryllium	+	+		Aerospace, defense, electronics
Bismuth	+	+		Electronics
Boron/Borates		+		Magnets, wind turbines
Cadmium	+	+	+	Rechargeable batteries, solar cells
Chromium	+	+		Stainless steel
Cobalt	+	+	+	Rechargeable batteries, magnets
Coking coal	+	+		Wind turbines, solar frames
Copper	+	+	+	Solar panels, wind turbines, electric vehicles
Feldspar	+			Advanced ceramics for electronics
Fluorspar		+		Hydrofluoric acid
Gallium	+			Integrated circuits, LEDs, solar panels
Germanium	+	+	+	Fiber optics, semiconductors, solar panels
Graphite	+	+	+	Batteries, electrodes
Hafnium	+	+		Semiconductors, aerospace
Helium	+			Semiconductors
Indium		+	+	Touch screens, photovoltaics, semiconductors
Iron	+	+	+	Decarbonised steal production, energy storage
Lead	+	+	+	Batteries
Lithium	+	+	+	Rechargeable batteries
Magnesite	+			Construction materials
Magnesium	+	+	+	Aerospace, electronics
Manganese	+	+	+	Batteries
Molybdenum	+	+	+	Semiconductors, power-generation turbines
Nickel	+	+	+	Rechargeable batteries, grid storage
Niobium	+	+	+	Superconductors, aerospace, electronics
Phosphates	+		+	Phosphate batteries
Platinum group metals			+	Catalytic converters, electronics, fuel cells
Rare earth elements (incl. scandium)	+	+	+	Electronic components, magnetic materials
Rhenium	+	+	+	Aerospace, electronic applications
Selenium	+	+	+	Solar cells, semiconductors, photoconductors
Silicon	+	+	+	Chips, semiconductors, solar panels
Silver	+	+	+	Photovoltaics, batteries, energy storage
Sodium	+			Solar panels
Strontium		+		Magnets, batteries
Tantalum	+	+	+	Capacitors, superconductors, aerospace
Tellurium		+	+	Solar cells, thermoelectric devices
Tin	+	+	+	Solder, batteries
Titanium	+	+	+	Aerospace
Tungsten	+	+	+	Electronics, aerospace
Vanadium	+	+	+	Vanadium redox batteries, aerospace
Zinc	+	+	+	Batteries, electric vehicles, semiconductors

Note: Minerals that are classified in the UK critical minerals list 2024 and/or in the EU 2023 list of critical/strategic raw materials are highlighted in grey. Cadmium, chromium, lead, molybdenum, selenium and silver were added because of their importance for the green transition. Iridium, rhodium and ruthenium are classified as critical by the UK but are not present in Central Asia.
Source: (Vakulchuk, 2021[6]) (UK Critical Minerals Intelligence Centre, 2024[47]) (European Commission, 2025[48])

The region's mining infrastructure is outdated and existing processing capabilities remain limited

Most countries in Central Asia have legacy mining operations served by outdated infrastructure. Although Kazakhstan (Minex Forum, 2025[49]) and Uzbekistan (Mining Technology Insights, 2025[50]) are planning to significantly modernise their mining infrastructure, there are still substantial efforts to be made to converge with world mining leaders such as Australia, Canada and South Africa. The mining infrastructure in the Kyrgyz Republic necessitates significant investment as well. The regional energy grids are also not well equipped to provide electricity for mass mineral mining. Mining necessitates considerable amounts of energy: as an example, mining currently accounts for 69% of Kazakhstan's industrial energy use. Central Asian power systems cannot currently meet energy demand, which has led to frequent blackouts, gas rationings and residential heating shortages. To be able to substantially increase its mineral production, the region will need new and modern power plants as well as upgraded high-voltage transmission lines (Atlantic Council, 2025[51]) (Center of Global Energy Policy at Columbia, 2023[52]).

Central Asian countries have limited mineral processing and refining capacity, although efforts to expand it are underway. China plays a key role in the establishment of new processing and refining facilities in Central Asia, as in Kazakhstan for copper, gold, silver and tungsten processing, and in Uzbekistan for the processing of iron ore and copper (Trends Research, 2025[53]). Despite these developments, Central Asia's processing and refining capacity remains insufficient for the region's autonomy in such operations. Kazakhstan, the country with the most advanced capabilities in the matter, possesses large processing and refining capabilities for titanium, tantalum, beryllium and niobium, and can refine some base metals like zinc and lead, but it cannot process CRMs such as lithium, nickel and cobalt, which are exported in raw form to Russia or China for these purposes (Atlantic Council, 2025[51]). The Kyrgyz Republic possesses gold refining infrastructure but lacks such capabilities for other metals. Uzbekistan's major mining SOE, the Almalyk Mining and Metallurgical Combine (AMMC), produces 148,000 tonnes of copper cathode each year, and also refines by-products such as gold and silver; however, the processing of other metals is still at an early stage.

Currently available geological data is significant but has not been updated since Soviet times

Central Asia has inherited significant mining infrastructure and geological data from the Soviet Union. However, limited geological exploration since the 1990s has led to a lack of a reliable, transparent and easily accessible data about mineral reserves in Central Asian countries (Carnegie Endowment, 2025[11]). Most of the currently available data comes from pre-independence geological mapping projects. For example, Soviet Kazakhstan's exploration spending in 1990 alone matched independent Kazakhstan's total expenses from 2003 to 2023 (Carnegie Endowment, 2025[11]). In the Kyrgyz Republic, the Kumtor mine, accounting for 90% of the Kyrgyz gold exports, is set to close in 2031 due to reserves depletion: the lack of exploration since independence will make it harder to offset this decline quickly with the development of new industries or deposits, putting at risk the Kyrgyz Republic's growth prospects (World Bank, 2023[9]).

Central Asian countries lack both accessible and up-to-date databases of mineral reserves, and Kazakhstan and Uzbekistan lack an official list of CRMs considered strategic for their economies. During the 3rd EU-Central Asia Economic Forum the parties signed the Data4CRM agreement which aims to address this problem through the modernisation of geodata systems and the improvement of the access to geological information, for a total budget of EUR 7.5 million and with the support of the Geological Survey of Finland (EEAS, 2025[38]).

In 2018, Kazakhstan introduced a new Code on Subsoil and Subsoil Use (SSU Code) that included provisions to expand public access to geological information. The Code also clarified rules on data

confidentiality and established institutional mechanisms for storing and systematising geological data (OECD, 2018[54]). Since its adoption, the country has been modernising its geological information system, including through the large-scale digitalisation of both modern and archival geological materials. To support more transparent and accessible data for investors, in 2025, Kazakhstan launched the Unified Subsoil Use Platform (minerals.e-qazyna.kz), which now offers access to more than 66 000 geological reports, licensing data, online application services and interactive mapping. The digitalisation of primary geological data is ongoing: as of 2025, over 73% of the national geological information had been digitalised, with full digitalisation expected by 2026 (Primeminister.kz, 2025[55]).

The Law on Subsoil of the Kyrgyz Republic designates all geological information gathered on subsoil as state property (Government of the Kyrgyz Republic, 2018[56]). Access to geological information is paid and granted only through written requests to the Department of Geology, with fees directed to the State Geological Information Fund. Currently, only about 30% of the materials in the Fund have been converted to electronic format; much of the archive is not digitalised, reports are neither geocoded nor available online, and some information may be classified as a state secret. This system creates costs that discourage investment in early-stage exploration and contrasts with good practices in places like Canada or Chile, where geological data is treated as a public good and is available for free (World Bank, 2023[9]). Nevertheless, the Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030 aims to digitise at least 95% of archival materials during the 2025-2030 period and integrate them into the Unified Integrated Geological Platform to ensure open access for investors.

Uzbekistan's revised Subsoil Law, in force since early 2025, introduces a requirement to establish an interactive geological portal that provides public access to a wide range of non-confidential geological data. The portal includes information on mineral deposits, legacy mining sites, contaminated areas and relevant environmental factors (including soil and hydrogeological conditions). In practice, it will enable access to the national subsoil cadastre, which brings together geological, geophysical, geochemical and hydrogeological datasets covering all known deposits and prospective areas. Sensitive information will remain protected; however, the law requires that geological data generated with public funding, as well as data from expired private licenses, be made publicly accessible, subject to confidentiality safeguards where appropriate (CIS Legislation, 2024[57]) (Grata International, 2025[12]). Prior to the law's adoption, Uzbekistan had already started publishing selected geological maps on its national Geoportal (geoportal-uz.org). Geological institutions have likewise been digitalising historical materials; Uzbekgeologorazvedka, for instance, has been gradually scanning Soviet-era exploration records and developing 3D models of major ore deposits in the Kyzylkum region (uzgeo.uz, 2025[58]).

The harmonisation of mineral reserves reporting systems is pending

All three Central Asian countries initially inherited the Soviet-derived mineral reserves classification system, known as the GKZ system (*Gosudarstvennaya Komissiya po Zapasam poleznykh iskopayemykh* – the State Commission for Mineral Reserves). International standards recognised by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) include frameworks such as the Australian JORC (Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves), the Canadian CIM (Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and Mineral Reserves), and the European PERC (Pan European Reserves and Resources Reporting Committee). Unlike these systems, the GKZ does not distinguish between mineral resources and reserves, using instead the term "balance reserves", which does not align with international reporting practices.

Kazakhstan joined CRIRSCO in 2016 (CRIRSCO, 2025[59]) to transition towards international standards. The government took its inspiration from the Australian JORC standards when designing its new KAZRC (Kazakhstan's code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves) system. At the time of writing, Kazakhstan uses both the new KAZRC system and the old GKZ

system which is still recognised in national regulations but is being progressively replaced (KAZRC, 2021[60]).

The Kyrgyz Republic is not a CRIRSCO member but officially transitioned to CRIRSCO standards in 2017, when it started designing its own KyrRC system. The harmonisation project, supported by the UN, was approved by Presidential Decree in February 2024. However, the GKZ system is still widely used, while large projects like Kumtor were reported to use both the GKZ and the CRIRSCO-compliant system (Grata International, 2025[8]) (CRIRSCO, 2022[61]). Under the Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030, KyrRC standards are expected to be fully integrated, while the GKZ system will be maintained for national oversight.

Uzbekistan is not yet a CRIRSCO member but transitioned to the JORC system in 2019-2020. Like Kazakhstan, Uzbekistan still maintains the GKZ system for internal accounting purposes, but this system is being phased out (Grata International, 2025[12]).

State ownership in mining activities remains dominant across the region

In all three Central Asian countries, the mining sector is dominated by SOEs, and joint ventures requiring a minority stake for the state are frequent in the region. Domestic private participation remains limited, as most local companies are smaller firms engaged primarily in mining support activities such as geological studies, drilling, and blasting.

In Kazakhstan, besides the large mining SOE Tau-Ken Samruk, deposits are mined by a small number of corporations, some of which are jointly owned by Kazakh and foreign investors and subject to significant state involvement, the most important being the Eurasian Resources Group (ERG) for high carbon ferrochrome, bauxite and iron ore and Kazzinc for zinc, copper, lead and gold (Vakulchuk, 2021[6]). Major domestic private sector actors in the mining industry are concentrated in Kazakhstan. These include ERG, in which the government holds a 40% stake, but which is primarily owned by domestic private actors, as well as Kazakhmys, the country's largest copper producer; Kaz Minerals, another major copper producer active in Kazakhstan and in the Kyrgyz Republic; and Solidcore Eurasia, a major gold producer. The main uranium mining SOE, Kazatomprom, also holds significant processing capabilities for tantalum, beryllium and niobium at its Ulba plant in Öskemen, which is one of the world's leading producers of these three minerals (Ulba.kz, 2026[62]).

In the Kyrgyz Republic, the mining sector is dominated by an SOE, Kyrgyzaltyn, which controls most of the mining sites, including the Kumtor gold mine, the largest in the country. Kyrgyzaltyn is the only company to produce pure gold in the Kyrgyz Republic, while doré, a semi-pure alloy of gold and silver, is banned from export, which means that smaller gold mining companies must refine their gold at the Kyrgyzaltyn-owned Kara-Balta refinery. The Precious Metals and Stones Law stipulates that gold produced in the country must be sold to the National Bank and can only be sold to third parties if the National Bank declines to purchase it. Finally, the state holds at least a minority stake of 30% in every major gold or silver mining project in the country (World Bank, 2023[9]).

In Uzbekistan, three SOEs, the Almalyk Mining and Metallurgical Combine (AMMC), the Navoi Mining and Metallurgical Combine (NMMC), and NavoiUran, dominate the country's mineral extraction, including gold, silver, copper and uranium: NMMC alone is estimated to have accounted for more than 20% of Uzbekistan's budget revenues in 2024 (Mining.com, 2025[63]). The Uzbekistan Technological Metals Complex (UzTMK), created in 2024 as a subsidiary of AMMC, is set to become a major actor in Uzbekistan's CRM industry: with an asset portfolio of over 100 development and R&D projects, UzTMK is expected to become a dominant enterprise in Central Asia for metals like tungsten, molybdenum, rhenium, tellurium, selenium, graphite, tantalum and others. UzTMK's activities involve upstream mining operations,

midstream metal production and end-product manufacturing, thus considerably reinforcing Uzbekistan's metal processing capabilities.

Openness to foreign partnerships and investment varies across the region

Foreign actors, predominantly Chinese, actively invest in Central Asia's mining industry. All three Central Asian countries host mining projects with foreign involvement. Joint ventures between foreign companies and domestic SOEs are the most frequent form of foreign investment in mining. An important tendency is the expanding Chinese involvement in Central Asia's mining industry. In 2021, China was already the most important foreign investor in the mining sector of the Kyrgyz Republic (Vakulchuk, 2021[6]). China is also increasing its presence in Kazakhstan and Uzbekistan, not only by investing in extraction facilities but also by supporting the development of initial processing capabilities in these countries (Trends Research, 2025[53]).

Kazakhstan is expanding and diversifying its international partnerships in the CRM sector

Kazakhstan is pursuing its co-operation with the UK, the EU and China. The on-going EU-Kazakhstan co-operation on critical raw materials was reinforced following the first EU-Central Asia summit in April 2025, with a Roadmap for 2025-2026, complementing the Memorandum of Understanding signed between parties in 2022. In parallel, the EU-funded project "GROW CRM" was launched in March 2025 for the EBRD to support joint CRM project identification and development, financing pre-feasibility and feasibility studies and offering targeted technical assistance to strengthen regulatory frameworks. The Kazakh National Geological Survey (NGS) and the British Geological Survey signed a three-year partnership in 2024 to digitalise NGS's data management system and develop a comprehensive, accessible geological data platform with advanced mapping and analysis tools (The Astana Times, 2025[64]). In November 2025, Kazakhstan signed a Memorandum of Understanding with the US focusing on CRMs, with notably a plan for the construction of a tungsten mining and processing plant (US Department of State, 2025[65]).

Among the main foreign investors in the Kazakh mining sector, the Anglo-Swiss mining giant Glencore is active in the exploitation of one gold mine, two silver mines and three zinc mines in the country (AIFC, 2025[3]), while the UK-based Central Asia Metals is active in the copper industry (World Bank, 2023[16]). An Australian-British mining giant, Rio Tinto, holds large copper and lithium exploration properties, including a lithium exploration project at the Kalba South-West site in the East Kazakhstan region under a license running until 2029 (kursiv.media, 2024[66]).The Australia-based Sarytogan Graphite Ltd. is currently operating at the Sarytogan graphite deposit, which is officially considered as strategic by the EU and is financially supported by the EBRD. In 2023, the German company HMS Bergbau acquired two controlling shares in mining and exploration licences for lithium, tantalum and rare earths in eastern Kazakhstan (Netherlands Enterprise Agency, 2025[67]). In 2025, the American Kaz Critical Minerals and the Canadian Ivanhoe Mines were also granted exploration licenses for rare earth, copper and other metal development (AIFC, 2025[3]). More recently, in February 2026, a major new development occurred when the US backed a USD 1.1 billion deal by California-based Cove Capital to develop two tungsten deposits in Kazakhstan, south of Karaganda, thus marking the first major US entry into Central Asia's CRM sector (Eurasianet, 2026[68]).

Chinese investment, primarily from Chinese SOEs, has been increasing in Kazakhstan's mining sector, making China the leading foreign investor in the country's CRMs industry, with involvement extending from research collaboration to extraction and processing. China is currently supporting a new USD 1.1 billion copper smelting project led by KAZ Minerals in the Abai region, which would simultaneously yield by-products from copper mining such as gold, silver and industrial sulfuric acid. Chinese companies are also active in Kazakhstan's tungsten sector: Jiaxin International Resources Investment runs an ore-

processing joint venture at the Boguty deposit in Almaty region, and East Hope Group is supporting the country's first tungsten processing plant and a new vertically integrated non-ferrous complex (Trends Research, 2025[53]).

The Kyrgyz Republic is re-opening its mining sector to foreign investment

The relationship between the government and foreign investors in the mining sector has been marked by frequent disagreements around social and environmental issues, resulting in repeated license suspensions, notably for Chinese companies (Nuraiym, 2025[69]). In 2021, a new Mining Code which was approved but never adopted was set to ban all foreign companies, except those who had already been granted licenses, from participating in future large mining projects, and planned to put all mineral development under State control (Mining.com, 2021[70]) (USGS, 2025[71]) (USGS, 2025[72]). In the same year, the Kyrgyz government took control of the Kumtor mine, the largest gold mine in the country, from the Canadian Centerra Gold which was operating the site. The final agreement between the two parties was reached in 2022, when the mine was effectively nationalised and put under Kyrgyzaltyn's control (Mining.com, 2022[73]). A July 2022 reform required that at least 90% of all employees working on mining projects in the Kyrgyz Republic be Kyrgyz citizens (World Bank, 2023[9]). The years 2022-2024 were also punctuated by temporary partial bans on the export of ferrous ingots, ferrous metal scrap and waste, gold-bearing ore and concentrate, as well as coal, which increased uncertainty about the government's goals in mining policy (USGS, 2025[72]).

The government is currently operating a policy shift in favour of new investment from abroad. The new Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030 plans for Memorandums of Understanding with foreign partners and for membership in international organisations such as the European Raw Materials Alliance (ERMA) and the Critical Minerals Association (CMA). However, these recent developments have not yet resulted in substantial foreign investment in the Kyrgyz mining sector.

Chinese actors are now the main foreign players in the Kyrgyz gold mining sector. Notably the Ishtamberdy mine is operated by the Chinese Full Gold Mining, the Kichi-Chaarat mine is owned by China National Gold (Nuraiym, 2025[69]) and the Taldybulak Levoberezhny site operated by the Zijin Mining Group through a joint venture with Kyrgyzaltyn (Trends Research, 2025[53]). It is not unusual that Chinese construction companies own shares in such projects, as they also build road infrastructure to ship the extracted gold resources to China (Nuraiym, 2025[69]). Recently, the Kyrgyz Republic and China launched a strategic partnership around lithium extraction (Trends Research, 2025[53]).

Russia remains an important player in the Kyrgyz gold mining sector, notably through projects led by Russian-owned companies Alliance Altyn (Talas region) and Highland Exploration LLC (Manas region) (World Bank, 2023[9]). Other foreign actors in Kyrgyzstan's mining sector include the Turkish Eti Bakir, which operates the Tereksay gold mine through a joint venture with Kyrgyzaltyn, the British Chaarat Gold, which operates two gold mines in the Manas region, and the Kazakh Kaz Minerals, which operates the Bozymchak gold-copper mine. Additionally, an Australian company, Vertex Gold Company, operates a gold mine in the Manas region (Alliance "For Budget Transparency", 2023[74]).

Uzbekistan is looking to diversify partnerships away from China, notably with EU countries and the US

In February 2026, Uzbekistan and the US signed a Memorandum of Understanding for Securing of Supply in the Mining and Processing of Critical Minerals and Rare Earths (Tashkent Times, 2026[75]). The government has also recently launched an ambitious USD 2.6 billion initiative to bolster its critical minerals sector, notably counting on US investment and support (Mining.com, 2025[76]). Some projects have already been announced with the multinational company Traxys on the exploration and extraction of

tungsten, molybdenum and copper (Frank.uz, 2025[77]). Uzbekistan also signed a Memorandum of Understanding with the EU in 2024 focusing on CRMs, with the perspective of further EU investment in the country's mining sector (The Brussels Times, 2025[78]). Foreign involvement in Uzbekistan's mining sector includes the French company Orano, which established a joint venture with the uranium mining SOE NavoiUran, and partnerships with Japanese JOGMEC and Turkish MTA and Calik Holding (Grata International, 2025[12]). AMMC has recently concluded a partnership with the Finnish Metso for the construction and equipment of a new copper smelting facility (Metso, 2024[79]).

However, most foreign investment in mining comes from China, which has notably been supporting several projects of initial processing facilities. In the Tashkent region, the Limaomaoli Metal Company is building a new mining complex in Syurenata which is set to extract 2.4 million tons of ore each year and to process it into 850,000 tons of ore concentrate. In the Namangan region, the China Mining Energy Group invested USD 200 million in a project in the Chust district combining mining and processing facilities set to produce an annual amount of 30,000 tons of refined copper (Trends Research, 2025[53]).

Latest reforms in the mining sector by country

Central Asian countries are reforming their legal frameworks for mining with implementation of the new provisions on-going

The legal frameworks for Central Asia's mining sectors have undergone substantial changes in recent years. Kazakhstan and the Kyrgyz Republic have amended their existing subsoil use laws and Uzbekistan has adopted a new law on subsoil. Kazakhstan is developing new partnerships as part of its plan to boost its critical minerals industry, while the Kyrgyz Republic and Uzbekistan are working to attract new foreign investment into their mining sectors through the lifting of restrictions and new investment legislation.

Kazakhstan has accelerated reforms to its subsoil use regime to attract investment and support critical minerals development

Kazakhstan's SSU Code, adopted in 2017 and amended in 2024, aims to attract investment in the country's mining sector by liberalising access to the geological data, mineral exploration and mineral production. The Code replaced the contract-based framework of the 2010 law, under which mining rights were granted through negotiated contracts or auctions and required lengthy multi-agency approvals. The Code introduced a streamlined licensing system for most solid minerals, while retaining contracts for hydrocarbons and uranium. For non-uranium solid minerals, rights are granted through an administrative, non-discriminatory procedure based on the order in which applications are received, enabling both domestic and foreign entities to obtain licences for geological study, exploration or extraction (Adilet, 2022[80]).

For solid minerals, extraction is carried out under licences and governed by a mining plan. Operators must meet annual minimum expenditure requirements, ensure that at least a minimum share of domestic value is reflected in the works and services they procure, and provide staged financial guarantees for mine closure. Extraction of common minerals is limited to 10 years, while hydrocarbons and uranium remain under the contract regime; uranium extraction contracts may last up to 25 years, including up to four years of experimental-industrial extraction.

The recent Comprehensive Plan for the Development of the Rare and Rare Earth Metals Industry of the Republic of Kazakhstan for 2024-2028 aims to introduce technologies for the complex extraction of CRMs, modernise the current mining infrastructure, develop new standards to regulate the mining industry and lift the secrecy regime of certain minerals. Under this Plan, the government has

concluded several agreements, notably with the British Maritime House Ltd, the German HMS Bergbau AG and the American Cove Capital Investments LLC for deposits development and processing (Mining See, 2024[81]) (Minex Forum, 2023[82]). In parallel, amendments to the SSU Code approved in December 2025 introduced electronic auctions for granting subsoil rights and a new contract regime for underexplored territories that gives priority to investors financing geological studies. The reforms also strengthened state control over uranium through expanded priority rights for the national uranium company (Trend.az, 2025[83]).

The Kyrgyz Republic has finalised a new CRM strategy which should open the sector to foreign investment and to more transparent licensing procedures

The Kyrgyz mining sector is regulated by the Law on Subsoil, last amended in 2024. The State Agency for Geology and Subsoil Use under the Ministry of Natural Resources, Ecology, and Technical Supervision is responsible for overseeing subsoil use in the Kyrgyz Republic. Licenses are granted through bidding processes and auctions, and less frequently through direct applications (Grata International, 2025[8]). The law provides three main mechanisms for granting rights: tenders, auctions and the "first-filed application" rule, while rights may also be granted to SOEs directly by decision of the Cabinet of Ministers. The 2024 amendments clarified auction rules by explicitly naming the highest bidder as the winner; for large and medium gold and silver deposits, the winning offer must also include a state share. License terms range up to three years for prospecting, four years for exploration and twenty years for extraction, with extensions permitted until the depletion of reserves. Following license issuance, subsoil users must pay the bonus and first-year license-holding fee, submit a technical project with positive industrial, environmental and subsoil-protection expertise, and comply with reporting and payment requirements.

Under an extraction license, the subsoil user obtains the exclusive right to develop a deposit within a designated mining allotment and acquires ownership of extracted minerals. Extraction activities must be carried out on the basis of a technical project with positive industrial, environmental and subsoil-protection expertise, and operators are required to ensure the fullest possible extraction of reserves while avoiding excessive losses or selective development. Subsoil users must comply with industrial safety and environmental protection requirements, submit annual geological and operational reports, and undertake land reclamation and mine-closure works (Government of the Kyrgyz Republic, 2022[84]).

In recent years, the government has re-opened the mining sector to foreign investment. In February 2024, a presidential decree on a national project for the extraction of polymetals and rare earth elements was signed, signalling a first opening-up. In June 2024, the government lifted a five-year-old ban on uranium and thorium mining and geological exploration (The Times of Central Asia, 2024[85]) (Interfax, 2024[86]), enabling advancement of projects such as Kyzyl-Ompol.

In 2025, the government finalised, with the support of the Boston Consulting Group, the Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030, containing an official list of 22 minerals present in the country's subsoil which the government considers as critical. In the Programme, the government recognises that the current requirement for the state to hold a minimum 30% share in all gold and silver mining projects should be brought into balance with the goal of attracting foreign investment, and that the Kyrgyz Republic is considered higher-risk by international rating agencies than other Central Asian countries. The Programme plans to increase annual foreign direct investment in the Kyrgyz mining sector to USD 700 million, to launch at least 5 new mining investment projects, and to reach USD 1 billion in annual CRM exports by 2030. The Programme also sets to replace the paper-based licensing system with a digital system and electronic auctions, while reducing license retention fees which are currently higher than in neighbouring countries. Finally, the establishment of special economic zones and industrial clusters is considered to incentivise deep processing of CRMs.

Uzbekistan updated subsoil and investment laws to streamline licencing, expand investor rights and improve access to information and data

Uzbekistan's new Law on Subsoil entered into force in early 2025, replacing the 2002 framework that had fragmented licensing processes, restricted transfers of subsoil rights, and offered limited access to geological data (Kun.uz, 2024[87]). The law establishes a one-stop shop for subsoil use permits granted by the Centre for Subsoil Use and improves access to geological and practical information for both government and investors. The law also grants license holders the right to transfer, sell and pledge their subsoil usage rights under state supervision, and introduces environmental standards for geological exploration and project development (Kun.uz, 2024[88]). The law was drafted by the government with the support of the EBRD, taking into account the existing legislation in countries with strong mining industries such as Canada and Australia to create better visibility for potential investors from these countries (Government of the Republic of Uzbekistan, 2024[89]). However, the contract stability guarantees exclude changes to labour and environmental protection frameworks, allowing the state to impose new requirements retroactively, creating the risk of regulatory unpredictability. Uzbekistan does not yet have an official critical minerals strategy, but the government is currently working with the Boston Consulting Group on a draft project for such a document.

The Centre for Subsoil Use issues licenses for all stages and types of mining, including artisanal mining. The licenses can be issued on a "first come – first served" basis or via auctions and tenders. The maximum term for extraction authorisations is generally up to 25 years. Authorisations may only be issued for free cadastral squares: excluded areas include areas designated as protected natural territories, reserved for auctions or tenders, subject to state geological study, or designated as prohibited by the Ministry of Mining Industry and Geology. The authorisation may be re-registered in the case of a change in cadastral squares. The authorisation holder may request the exclusion of specific cadastral squares at any time, provided that the remaining squares are contiguous. Payments include the application processing fee and the annual license payment (Lex.uz, 2024[90]).

The main legal provisions on investment are contained in the Law On Investment and Investment Activities approved in 2025: this new law enhances investor protections, raises the land use rights term for investors, reduces foreign investor equity participation requirements from 15% to 10% and improves legal certainty (OECD, 2025[91]) (Eurasian Star, 2025[92]). The new Law on Environmental Expertise, Environmental Impact Assessment and Strategic Environmental Assessment mandates environmental impact assessments for relevant projects and programmes (Grata International, 2025[12]).

Gender in mining

The green and digital transitions open opportunities for women's participation in the mining sector, but the latter remains limited due to structural barriers

As efforts to improve labour conditions in the mining sector continue, policy discussions increasingly emphasise that gender equality is also a central element of a responsible mining agenda (ILO, 2021[93])**.** At the global level, women account for only about 15% of the mining workforce (World Bank, 2024[94]). Advancing their equal participation is both a global commitment under the Sustainable Development Goals (notably SDG 5 on gender equality and SDG 8 on decent work and economic growth) and an economic imperative, as the underutilisation of women's human capital hinders long-term economic development (Duflo, 2012[95]) (OECD, 2024[96]). Empirical studies in labour economics further demonstrate that gender-based barriers, particularly in high-productivity sectors such as large-scale mining, have historically misallocated talent and reduced aggregate productivity, thereby suppressing output and slowing GDP growth (Hsieh, 2013[97]) (Cuberes, 2016[98]). Recent OECD analysis also highlights that increasing women's participation has become strategically important for the mining sector's

long-term competitiveness. Industry evidence shows that mining companies with more gender-diverse leadership teams have a 25% higher likelihood of exceeding performance goals, and mixed-gender crews report injury rates about 67% lower than homogeneous teams (McKinsey & Company, 2023[99]) (OECD, 2025[100]).

Women's low representation in mining results from a combination of longstanding legal, cultural and structural barriers that restrict their access to both traditional and new occupations. Historically and on a global scale, women were prohibited from underground and hazardous mining work, a restriction formalised under the ILO Underground Work (Women) Convention, 1935 (No. 45), which was abrogated only in 2024 (ILO, 2024[101]). These legislative constraints have reinforced entrenched perceptions of mining as a physically demanding and inherently masculine field and have contributed to workplace cultures where harassment and gender-based discrimination are well documented. Structural barriers also limit women's employment in mining. A 2019 gender analysis in Western Australia found that inadequate childcare and basic social services at remote sites, combined with long and inflexible shift rotations, deter around 60-70% of female applicants. Consequently, women remain concentrated in administrative and office roles, while operational, technical and site-based positions remain male-dominated. These patterns are reinforced by a 15-25% gender pay gap in the sector and by a higher prevalence of part-time or casual contracts among women (OECD, 2025[100]).

The ongoing digital and green transitions are reshaping labour demand in mining and creating new opportunities to expand women's participation. Advances in automation, remote-operated machinery and digital monitoring systems reduce the physical demands of frontline mining work and shift many tasks from remote sites to urban control centres, easing structural barriers for women, such as long, inflexible shift rotations and distance from family support systems. These transitions are also generating new roles in programming, data analytics, remote operations management and environmental monitoring. Fully realising these opportunities, however, requires continued efforts to close STEM education gaps so that women, who make up only 35% of STEM graduates and around 40% of the global STEM workforce, can access the emerging high-skill occupations shaping the future of mining (OECD, 2025[100]) (ILOSTAT, 2023[102]) (UNESCO, 2024[103]).

In Central Asia, hazardous mining environments reinforce persistent gender inequality, as women's participation continues to be hindered by both physical risks and long-standing legal barriers. For decades, labour codes across the region directed women toward the services sector, specifically health and education. Although all three Central Asian countries have recently amended or repealed prohibitions on women's employment in hazardous industries, none guarantee equal access to employment in the construction, manufacturing and mining sectors (UNDP, 2016[104])); women's participation in mining continues to be constrained by educational gaps, occupational segregation and limited career development opportunities.

Kazakhstan recently lifted regulatory restrictions on female employment including in the mining sector

In 2023, women represented about 17.8% of the mining and quarrying workforce in Kazakhstan (QazStat, 2024[105]), with participation highest in metallurgy (26%) and metal ore mining (23.6%). Operational roles, such as field-based extraction, continue to be male-dominated, reflecting the legacy of long-standing legal restrictions (EnergyProm, 2019[106]) (Atakhanova and Howie, 2022[107]). In 2021, the Kazakh Labour Code was amended to lift occupational restrictions for women in industrial jobs previously classified as hazardous (World Bank, 2023[108]); nevertheless, structural and educational factors continue to influence progress toward full gender parity. In 2024, women comprised 31.1% of STEM graduates (down from 35.1% in 2016) (World Bank, 2025[109]), with particularly low representation in mechanical engineering. Moreover, STEM-educated women often do not pursue mining and other STEM-related careers, due to societal expectations, prevailing gender norms and limited career support (CohenMiller,

2021[110]). Leading companies such as ERG and KAZ Minerals have reaffirmed their commitment to eliminating gender-based discrimination, reporting that women constitute 26.2% and 21% of their workforces, respectively, with 38% and 26% of managerial positions held by women (MINEX Kazakhstan, 2023[111]).

The Kyrgyz Republic possesses more granular data on female employment in the mining sector, although the latter remains limited

Table 1.2. Employment in mining and quarrying in the Kyrgyz Republic by occupation (ISCO-1) and gender, 2022 (%)

ISCO Code	ISCO Major Group	Men (%)	Women (%)	Total (%)
1	Managers	1.93	-	1.80
2	Professionals	4.93	26.30	6.32
3	Technicians and Associate Professionals	5.24	-	4.90
4	Clerical Support Workers	1.04	-	0.98
5	Service and Sales Workers	8.43	31.00	9.91
7	Craft and Related Trades Workers	15.42	-	14.41
8	Plant and Machine Operators and Assemblers	45.66	-	42.67
9	Elementary Occupations	17.35	42.70	19.01
Total	100.00	100.00	100.00	100.00

Source: (StatKG, 2023[112])), OECD analysis.

Table 1.3. Employment in mining and quarrying in the Kyrgyz Republic by occupation (ISCO-1) and gender, relative to total gender percentage, 2022 (%)

ISCO Code	ISCO Major Group	Men (%)	Women (%)	Total (%)
1	Managers	1.80	-	-
2	Professionals	4.61	1.71	6.32
3	Technicians and Associate Professionals	4.90	-	-
4	Clerical Support Workers	0.97	-	-
5	Service and Sales Workers	7.88	2.03	9.91
7	Craft and Related Trades Workers	14.41	-	-
8	Plant and Machine Operators and Assemblers	42.67	-	-
9	Elementary Occupations	16.22	2.8	19.02
Total		**93.46**	**6.54**	**100.00**

Source: (StatKG, 2023[112]), OECD analysis.

In 2022, women made up 6.54% of all employees in the extractive sector in the Kyrgyz Republic (StatKG, 2023[112])**.** A more specific gender diagnostic conducted among 10 major mining companies in the country found that in 2021 women made up only 12% of the workforce of the analysed companies, with just 7% holding managerial positions (Alliance "For Budget Transparency", 2023[74]). In this context, the Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030 aims to raise women's participation in the critical minerals sector to 15%. More broadly, women across the country are primarily employed in tertiary sectors such as real estate, education and healthcare, which tend to pay lower average wages, while men are more prevalent in industrial sectors, including construction and mining (StatKG, 2023[112]). Amendments to the Kyrgyz Labour Code in 2025 removed employment restrictions for women (except for pregnant and lactating women) in nearly 400 occupations classified as hazardous, including underground mining and heavy lifting (The Times of Central Asia, 2025[113]). Nevertheless, practical and cultural factors continue to influence women's participation in these sectors: relatively few girls pursue studies in mining or engineering, resulting in a limited pool of qualified female candidates (GIZ, 2014[114]). Recent international initiatives have sought to address these gaps; for instance, in 2023-24, UNDP implemented a mentoring and leadership programme in the Kyrgyz Republic aimed at increasing women's representation in STEM fields, where they currently account for only about 34% of graduates (UNDP, 2024[115]) (World Bank, 2025[109]).

Uzbekistan's largest mining SOEs and line ministry have undertaken initiatives to promote female employment in mining

Women currently represent 16% of the workforce in Uzbekistan's mining sector. Since 2019, occupational restrictions for women have been lifted in several industries; however, some restrictive norms persist in mining and metallurgy (The Times of Central Asia, 2024[116]). Leading mining companies have begun promoting gender equality initiatives: in 2024, the Navoi Mining and Metallurgical Combine (NMMC) joined the International Women in Mining (IWiM) initiative as a partner and currently reports that women constitute over 13% of its workforce, including approximately 13% of leadership positions (NMMC, 2024[117]). In 2025, the Almalyk Mining and Metallurgical Combine (AMMC) and the German bank KfW created a joint Uzbekistan-Europe Women Leaders Society which organised several conferences to promote female leadership, as well as mentorship and ambassador programmes to advance the inclusion of women in the mining sector. The Ministry of Mining Industry and Geology has also publicly promoted women's participation, reporting a steady increase in female geology students. In 2024, women accounted for 30.5% of STEM graduates in Uzbekistan, in consistency with regional patterns (Ministry of Mining Industry and Geology of the Republic of Uzbekistan, 2025[118]) (World Bank, 2025[109]).

Policy considerations

Enhance geological mapping through renewed exploration and harmonised reporting of reserves

Governments of Central Asian countries should consider scaling up their subsoil exploration projects to provide domestic companies and potential investors with better visibility on the types of minerals present and the scale of available reserves. Governments should also consider providing more exploration licenses to foreign companies and creating joint ventures for soil exploration. The mineral reserves reporting systems should be harmonised, not only with CRIRSCO member countries but within Central Asia as well:

- Kazakhstan, which is already a CRIRSCO member, could finalise its transition to CRIRSCO reporting standards and completely phase out the GKZ system in favour of the KAZRC system.

- The Kyrgyz Republic and Uzbekistan could finalise their transition to CRIRSCO standards and consider becoming CRIRSCO members as well.

Kazakhstan and Uzbekistan could also consider publishing official lists containing minerals they consider as critical and/or strategic for their economies. The Kyrgyz Republic already has an official list.

Clarify legislation and rules to potential investors

Governments could consider providing investors with clear guidance on legislation and rules touching upon mining revenue taxation and environmental and social standards. This would avoid future misunderstandings and disagreements between investors and governments, leading to less litigations and fewer project terminations. Fuller, clearer and more systematic provision of information and guidance in this respect will allow governments to attract foreign investment more easily and lead to better informed co-operation between different parties in the mining process.

Promote fair hiring conditions and skills development for a more inclusive and productive mining sector

Advancing women's participation in mining requires addressing both remaining legal barriers and broader structural constraints. Governments and companies could consider strengthening the implementation of gender-equal labour regulations, encouraging fair recruitment practices, including the use of structured or automated hiring tools that can help reduce bias, and fostering workplace environments that better support inclusion (Box 1.3). Building on existing regional initiatives supported by international organisations, Central Asian governments could invest in expanding opportunities for women's skills development and training in relevant fields to help widen the pool of qualified female candidates. Mining companies could also promote women's career progression by creating more pathways into technical and leadership roles and by increasing the visibility of women's contributions across the sector. Over time, the more effective utilisation of women's human capital would help strengthen labour-market efficiency across the region.

Box 1.3. Automated hiring tools for a fairer recruitment process: the "Applied" platform

Bias in recruitment processes can limit women's entry into traditionally male-dominated sectors such as mining. Introducing more structured or technology-supported methods can help improve fairness in early screening. One example is "Applied", a UK hiring platform informed by behavioural-science principles that supports skills-focused shortlisting and limits the role of subjective judgement in hiring decisions.

Applied provides a range of structured assessment tools, including analytical and numerical exercises, situational-judgement questions and short work-sample tasks, as well as anonymised CV review and structured interviews. Its screening process anonymises candidate responses, reviews them by skill area and applies independent scoring by multiple reviewers. The platform then brings these scores together into a single ranking to support more consistent, evidence-based decisions. Applied also includes tools to review job-description language for potential bias and provides analytics to help organisations monitor diversity patterns.

While such tools cannot address the broader structural barriers to women's participation in mining outlined in this chapter, they can complement wider policy and company-level efforts by encouraging more transparent and fairer recruitment practices and supporting the identification of female candidates who may otherwise be overlooked at the initial screening stage.

Source: (Be Applied, 2025[119])

Collect gender-disaggregated data to inform policymaking and support women's employment in the mining sector

Better availability of gender-disaggregated data in mining statistics would allow for more detailed information on women's participation and roles in the sector, as well as information regarding the challenges they are facing. While gender-disaggregated data for the mining sector is accessible in the Kyrgyz Republic, this is not the case for Kazakhstan and Uzbekistan. Wider availability of such data would help governments, SOEs and domestic private enterprises design targeted and evidence-based policies to mainstream gender-specific objectives. Disaggregated data would not only help assess the difference of the mining sector's economic impact on men and women, but also its social and cultural impact, which would allow policymakers to make targeted decisions in favour of better employment opportunities and working conditions for women in mining.

Report outline

Building on this analysis, the following chapters address three critical dimensions of sustainable CRM governance, which together underpin the social, environmental and economic resilience of the sector. The next chapter examines how **responsible business conduct (RBC)** can help manage social and ethical risks across the CRM value chain, ensuring that mining contributes positively to local communities. The subsequent chapter focuses on the **management of environmental risks** and identifies policy tools to align CRM development with climate and resource sustainability objectives. The final chapter turns to **tax policy and illicit financing**, analysing how transparent and equitable fiscal frameworks can strengthen public revenues and curb base erosion and profit shifting.

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Annex 1.A. Main mining projects in Central Asia

Annex Table 1.A.1. Main on-going mining projects in Central Asia

Country	Operator	Origin	Projects	Minerals/metals
Kazakhstan	Tau-Ken Samruk	Domestic	Tau-Ken Altyn	Gold
			Shalkiya deposit and processing plant	Lead, zinc
			Alaigyr deposit	Lead, silver
	Kazatomprom	Domestic	Ulba Metallurgical Plant	Tantalum, beryllium, niobium
	JSC Qarmet	Domestic	Orken-Lisakovsk mine	Iron ore
			Coal Department / Vostochnaya mine	Coal
			Temirtau plant	Steel
	ERG	Domestic	TNC Kazchrome	Chrome, ferrochrome, ferroalloys
			Sokolov-Sarbai Mining Production Association	Iron ore
			Aluminium of Kazakhstan/ Kazakhstan Aluminium Smelter	Aluminium
			Shubarkol Komir	Coal
	Kazakhmys	Domestic	Zhezkazgan complex	Copper, gold, silver
			Balkhash complex	Copper, zinc
	Kazzinc/Glencore	Domestic (foreign-owned)	Ridder complex	Lead, zinc
			Öskemen complex	Lead, zinc
	Solidcore Eurasia	Domestic	Kyzyl cluster	Gold
			Varvara hub	Gold
			Syrymbet deposit	Tin, polymetals
	KAZ Minerals	Domestic	Bozshakol open pit	Copper, gold, silver
			Aktogay open pit	Copper
	Central Asia Metals	United Kingdom	Kounrad mine and plant	Copper
	Sarytogan Graphite Ltd.	Australia	Sarytogan deposit	Graphite
	Jiaxin International Resources	China	Boguty mine	Tungsten
Kyrgyz Republic	Kyrgyzaltyn	Domestic	Kumtor mine	Gold
			Makmal mine	Gold
			Kara-Balta refinery	Gold
	Alliance Altyn	Russia	Jerooy mine	Gold
	Zijin Mining	China	Taldybulak Levoberezhny mine	Gold
	Highland Exploration LLC	Russia	Unkurtash deposit	Gold
	Eti Bakir Tereksay	Türkiye	Terekkan deposit	Gold
	Full Gold Mining	China	Ishtamberdy deposit	Gold
	Chaarat Gold Holdings	United Kingdom	Chaarat group of deposits	Gold
	Kaz Minerals	Kazakhstan	Bozymchak mine	Copper, gold
Uzbekistan	Nurlikum Mining (NavoiUran, Orano, and Itochu Corporation)	Domestic / France / Japan	South Djengeldi	Uranium
	UzTMK	Domestic	Taskazgan deposit	Graphite

	Shargunkumir JSC with China Railway Tunnel Group & China Coal Technology & Engineering	Domestic / China	Shargunkomir JSC	Coal
	Triangul Metals Tebinbulak	Domestic	Tebinbulak	Iron ore
	Navoi Mining and Metallurgical Combine (NMMC)	Domestic	Muruntau mine	Gold
	AMMC, Enter Engineering and Uralmashzavod	Domestic / Russia	Yoshlyk I deposit	Copper

Source: OECD analysis.

Annex 1.B. CRM endowments in Central Asia

Annex Table 1.B.1. Kazakhstan's CRM endowments

Name	Reserves (metric tons)	Year of data
Aluminium (including bauxite)	275,000,000	2023
Barite	85,000	2023
Beryllium	58,000	2024
Bismuth	5,800	2016
Cadmium	85,233	2021
Chromium	320,000,000	2025
Coal	170,000,000,000	2025
Cobalt	208,121	2021
Copper	20,000,000	2025
Germanium	4,372	2021
Graphite	488,400	2021
Iron	26,700,000,000	2023
Lead	14,100,00	2023
Lithium	75,600	2024
Magnesium	400	2025
Manganese	656,000,000	2023
Molybdenum	1,000,000	2024
Nickel	2,000,000	2025
Niobium	28,100	2024
Phosphate	1,580,000,000	2025
Rare earth elements	> 613	2025
Rhenium	190	2024
Silicon	5,090,000	2021
Silver (kg)	48,153	2021
Tantalum	4,600	2024
Tin	192,375	2021
Titanium	45,608,070	2021
Tungsten	2,000,000	2025
Vanadium	800	2025
Zinc	7,600,000	2025

Note: This list only includes mineral reserves for which data has been found. Other CRMs present in Kazakhstan include arsenic, feldspar, gallium, hafnium, helium, magnesite, selenium and sodium.
Source: (AIFC, 2025[3]) (Vakulchuk, 2021[6]) (Mining See, 2024[120]) (Kazphosphate, 2025[121]) (Jp-kz.org, 2016[122]) (Cbonds, 2024[123]) (E-Qazyna, 2025[124]) (AIFC, 2024[125]) (USGS, 2024[126]) (Forbes.kz, 2025[127])

Annex Table 1.B.2. The Kyrgyz Republic's CRMs endowments

Name	Reserves (metric tons)	Year of data
Aluminium (including bauxite)	199,470,800	2022
Antimony	273,484.5	2022
Arsenic	94,718	2022
Barite	86,000	2022
Beryllium	25,247.2	2022
Bismuth	6,227.7	2022
Cadmium	353.6	2021
Chromium	390,000	2021
Coal	24,000,000,000	2024
Cobalt	273	2022
Copper	796,000	2022
Fluorspar	4,105,000	2022
Graphite	272,215	2021
Indium	2,617	2021
Iron	472,200	2022
Lead	47,700	2022
Lithium	13,923	2021
Manganese	48,144.6	2022
Molybdenum	3,733.3	2022
Rare earth elements	63,300	2022
Selenium	2.7	2021
Silver	973.8	2022
Tellurium	1,524.5	2021
Tin	209,764.3	2022
Tungsten	123,160.2	2022
Zinc	32,100	2022

Note: This list only includes mineral reserves for which data has been found. Other CRMs present in the Kyrgyz Republic include nickel and titanium.
Source: (Government of the Kyrgyz Republic, 2022[128]) (Vakulchuk, 2021[6]) (Central Asian Geoportal, 2025[129]) (Interfax, 2024[130]) (EITI, 2022[131]) (Daryo.uz, 2024[132])

Annex Table 1.B.3. Uzbekistan's CRM endowments

Name	Reserves (metric tons)	Year of data
Aluminium (including bauxite)	12,700	2021
Cobalt	645	2021
Copper	24,800,000	2024
Germanium	74.6	2024
Graphite	1,300,000	2024
Indium	38.9	2024
Iron	22,000,000	2021
Lead	413,000	2021
Lithium	178,500	2024
Manganese	173,000	2021
Molybdenum	373,400	2024
Nickel	3,700	2021
Phosphates	300,000,000	2025

Rhenium	804.2	2024
Selenium	26,300	2024
Silicon	12,000	2021
Silver	27,000	2024
Tellurium	2,800	2024
Tin	9,500	2021
Titanium	350,000,000	2021
Tungsten	2,600	2024
Vanadium	112.7	2024
Zinc	4,549,000	2021

Note: This list only includes mineral reserves for which data have been found. Other CRMs present in Uzbekistan include cadmium, magnesium, niobium, platinum group metals, rare earth elements and tantalum.
Source: (Vakulchuk, 2021[6]) (Ministry of Mining Industry and Geology of the Republic of Uzbekistan, 2024[133]) (Geoportal of Uzbekistan, 2025[134])

2 Advancing Responsible Business Conduct (RBC) standards in mineral supply chains

Governments in Central Asia have begun adopting measures to promote responsible business conduct (RBC), including policies that support the implementation of OECD standards in the mining and metals sector. Policies that enable RBC with respect to labour standards, stakeholder engagement, social and community dialogue, anti-corruption, and due diligence of mineral sourcing can help the region position itself as a trusted extraction, trade and processing hub for critical minerals.

Introduction

Central Asia has a significant mining sector and is gradually adopting measures on responsible business conduct to enhance the sector's contribution to sustainable development. This comes against a backdrop of increasing interest among policymakers in enhancing the resilience of critical minerals value chains (see Chapter 1).

This dynamic has led to the emergence of a range of government-backed initiatives spanning blended-finance facilities, strategic stockpiling, export and development finance, price floor mechanisms and collaboration with commodity traders, all of which will also play a role in supporting G7 Standards-based Markets for Critical Minerals. In this context, RBC has a dual purpose: in addition to ensuring the mining sector develops in sync with expectations on decent work, the environment and public integrity, it can also help the region access new investment in critical minerals from more diverse sources by supporting smoother deployment of blended finance and related government-backed initiatives.

The European Union, the United States and the United Kingdom have already established memoranda of understanding with Kazakhstan and Uzbekistan on critical minerals. In the course of recent OECD work in the region, including multi-stakeholder consultations in Kazakhstan, the Kyrgyz Republic, and Uzbekistan, a consistent finding has emerged: investors, traders, and public finance institutions will only scale up engagement where responsible business conduct, due diligence, and transparency are sufficiently robust to manage corruption, and environmental and community-level risks that can delay, disrupt, or derail mining projects.

Central Asia therefore has an opportunity to align national policies with OECD standards already embedded in market requirements such as the London Metal Exchange's responsible sourcing rules. The recommendations in this report represent entry points for de-risking investment, increase eligibility for blended-finance tools, and helping the region integrate more seamlessly into standards-based markets.

Chapter outline

Although the mining sector in Central Asia has traditionally been dominated by domestic state-owned enterprises (SOEs), foreign public and private sector involvement has been increasing, notably in minerals like graphite in Kazakhstan, antimony in the Kyrgyz Republic or copper in Uzbekistan. This diversification has been accompanied by increased expectations for enterprises to address the adverse impacts linked to their activities, contribute to the social and economic well-being of local communities and adopt more sustainable mining practices. These expectations, which underpin a "social license to operate", increasingly apply to the traditionally dominant SOEs, as the adoption of a number of sustainable practices are now required for obtaining international financing of major projects (Daryo.uz, 2023[1]). In this context, it is important for enterprises operating in and sourcing from the Central Asian mining sector to observe responsible business conduct (RBC) standards.

The chapter will cover three major RBC topics:

- **Governance in the mining sector**: this includes an overview of existing RBC policies relevant to the mining sector, as well as risks spanning corruption and anti-competitive practices.
- **Labour rights**: this includes government and SOE policies to promote RBC with respect to labour rights in the mining sector.
- **Meaningful engagement of local communities**: this includes policies of governments and practices of mining companies regarding consultation of local communities and their involvement in decision-making around mining projects to mitigate adverse social and environmental impacts of mining.

The chapter begins with an overview of RBC standards and how they intersect with institutional developments in the region, then addresses the three topics above in the context of the mining sectors in Kazakhstan, the Kyrgyz Republic and Uzbekistan followed by recommendations.

OECD standards on RBC for multinational enterprises and SOEs

The *OECD Guidelines for Multinational Enterprises on Responsible Business Conduct* (MNE Guidelines) are expectations by governments for how companies should address actual and potential adverse impacts of their operations, products and services, and supply chains on people, the planet and society. They apply to businesses and investors of all sectors, sizes and ownership structures, and cover all key sustainability issues – from climate change to technology, from anti-corruption to human rights and labour standards (OECD, 2023[2]). OECD standards on RBC expect companies to carry out risk-based due diligence, which consists of six steps:

- embedding responsible business conduct into their policies and management systems;
- identifying and assessing actual or potential adverse impacts on people, planet and society;
- ceasing, preventing or mitigating these impacts;
- tracking implementation and results;
- communicating how impacts are addressed; and
- providing for or co-operating in remediation of impacts when appropriate.

Meaningful stakeholder engagement is important throughout the due diligence process, in particular when the enterprise may have caused or contributed to an adverse impact. The OECD has developed sector-specific guidance to complement and operationalise the MNE Guidelines, including the Due Diligence Guidance for Responsible Mineral Supply Chains (OECD Minerals Guidance) and the Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector (OECD Stakeholder Engagement Guidance). Like the MNE Guidelines, these documents are OECD legal instruments and are recommendations addressed by OECD members and other adhering countries to businesses operating in or from their territories. While the standards themselves are voluntary, the Minerals Guidance has been integrated into legal requirements, commodity exchange rules or other market expectations for 15 minerals and metals around the world, including for metals traded on the London Metal Exchange.

Governments that adhere to OECD standards on RBC are also required to set up a National Contact Point (NCP) for RBC. NCPs are national agencies established by the 52 adherent governments to promote and support responsible business conduct. They raise awareness of the Guidelines, provide guidance to stakeholders, and function as a non-judicial grievance mechanism by handling “specific instances” involving alleged non-observance by companies. NCPs may also support their governments’ policy efforts on RBC and must operate according to OECD effectiveness criteria, including visibility, accessibility, transparency, accountability, and impartiality. Kazakhstan became an Adherent to the OECD Guidelines for Multinational Enterprises on RBC in 2017 and created an NCP (see Box 2.2).

The OECD has also developed Guidelines on Corporate Governance of State-Owned Enterprises (SOE Guidelines) (OECD, 2024[3]). SOEs often act as market shapers in mining-dominated economies. Their practices can set de facto standards for private operators and suppliers. The state’s dual role as owner and regulator, creates both opportunities (i.e. policy alignment, direct implementation of national development priorities) and risk (i.e. conflicts of interest, weakened regulatory oversight) (OECD, 2025[4]). The SOE Guidelines address the public policy rationale for state ownership, transparent governance to avoid conflicts of interest, competitive neutrality, disclosure and integrity. The 2024 update to the SOE Guidelines added provisions on sustainability across the following issues:

- **adopting and communicating the state’s expectations on RBC** via the ownership policy

- **ensuring a strict separation between the state's ownership and regulatory functions** to avoid conflicts of interest and ensure a level playing field;
- **ensuring that the board is composed of qualified, independent, and professional members** with the authority and autonomy to exercise objective judgment and oversee management effectively**.**
- **aligning sustainability reporting and disclosure with high-quality, internationally recognised standards**;
- integrating sustainability considerations into SOE risk management and internal control systems, i**ncluding by conducting risk-based due diligence**; and
- **developing and encouraging meaningful stakeholder** engagement, particularly from persons or groups that may have an interest in or could be impacted by an enterprise's activities.

Enabling policy conditions for responsible business conduct

Governance in the mining sector

The OECD has developed tools and provided recommendations for governments to ensure better governance. Some of these are not mining-specific but are relevant to the sector. These include an independent and specialised anti-corruption body (OECD, 2025[5]) that can conduct investigations, including of SOEs; integrating RBC as part of core business decision-making for SOEs as an effective risk management tool (OECD, 2022[6]); a sound and transparent public procurement framework which ensures accessibility to public procurement processes, fair competition among suppliers, and effective monitoring of contract execution (OECD, 2025[7]); and adherence to, promotion, and monitoring of RBC instruments, such as the Guidelines for Multinational Enterprises on RBC and sectoral standards like the OECD Minerals Guidance (OECD, 2016[8]) and the OECD Stakeholder Engagement Guidance (OECD, 2017[9]). The Recommendation on the Role of Government in Promoting Responsible Business Conduct includes taking appropriate measures so that those affected by non-observance of RBC standards by companies have access to effective judicial or non-judicial remedy mechanisms (OECD, 2022[10]). OECD RBC instruments also set out due diligence expectations for companies' supply chains, ensuring the integrity of mineral trade through companies' sourcing decisions.

RBC expectations apply to SOEs just as they do to private enterprises and can play a particularly important role in sectors like mining where SOEs are often dominant, to the point of having quasi-regulatory functions. SOE policies on RBC can help set a good example for private enterprise peers, for example through consistent disclosure of RBC-related information and how they have conducted their due diligence (OECD, 2023[2]), in addition to environmental assessments, and the existence within SOEs of internal controls, ethics and compliance programmes to effectively prevent, detect and address corruption, especially in large SOEs where situations of conflict of interest may occur.

Box 2.1. The Extractive Industries Transparency Initiative (EITI)

The Extractive Industries Transparency Initiative (EITI) is a multi-stakeholder initiative that promotes transparency, accountability and open management of natural resources, particularly in the oil, gas and mining sector. Established in 2003, it is intended to address situations where revenues from resource extraction are lost to corruption or mismanagement.

Within the EITI, each implementing country forms a multi-stakeholder group composed of government representatives, civil society members and industry stakeholders to oversee the implementation of the

EITI process. The countries produce annual EITI reports which include data on contracts, licenses, production volumes, revenue allocation and expenditures related to extractives sector.

The EITI standard, last updated in 2023, sets the criteria that countries and companies must meet to be considered as EITI-compliant: this standard was set to cover transparency through the entire value chain, from the granting of licenses and contracts to revenue collection and distribution. Countries are assessed on a scale going from "satisfactory" to "inadequate".

Kazakhstan and the Kyrgyz Republic are EITI implementing countries.

Source: (EITI, 2025[11]) (UK EITI, 2025[12])

Labour rights

Upholding labour rights, including freedom of association and collective bargaining, is integral to responsible business conduct, including in the mining sector. According to the OECD MNE Guidelines, enterprises are expected to respect workers' rights in line with the ILO Declaration on Fundamental Principles and Rights at Work, including the freedom of association and right to collective bargaining, the effective abolition of child labour, the elimination of all forms of forced or compulsory labour, non-discrimination in employment and occupation, and promoting a safe and healthy working environment. These principles and rights have also been developed in the form of specific rights and obligations in ILO Conventions.

Effective labour protection required that several policy frameworks be in place, starting with a clear legislative framework or government strategy on labour protection (OECD, 2025[7]), within which the government engages with businesses and trade unions, and effective dialogue between management and workers on labour, safety and employment issues takes place. Other conditions include effective grievance mechanisms to ensure fair compensation to accident victims and prevent future workplace accidents; **and** adequately staffed agencies with a mandate to conduct unannounced labour inspections (OECD, 2025[7]). Governments can play a role in defending these rights, and mining SOEs can set an example in upholding them.

Meaningful consultation of local communities

Meaningful stakeholder engagement is a key component of the due diligence process in the mining sector and helps prevent conflict with local communities and supply chain disruptions. In some cases, stakeholders have a right to be consulted. Clear expectations for mandatory risk assessment processes include Environmental Impact Assessments (EIA), Strategic Environmental Assessments (SEA) and Social Impact Assessments (SIA) of mining projects. For large mining projects, stakeholder engagement can take many forms including public consultations with publicly accessible outcome summaries, participating in and sharing results of on-site assessments, and ensuring a fair distribution of benefits with local communities.

Corporate and social responsibility (CSR) programmes commonly rely on philanthropic approaches to managing company-community relationships. While such activities may complement RBC efforts, they can also fall outside the scope of RBC standards and do not replace due diligence focussed on actual or potential adverse impacts an enterprise may cause, contribute to or be directly linked to through its business relationships. In certain contexts, CSR initiatives can nonetheless support community well-being, local acceptance, and risk management.

Governance in Central Asia's mining sector

Kazakhstan is advancing RBC and minerals governance but could address corruption risks, illicit mining and high-risk supply chains more effectively

Kazakhstan has taken steps to adopt RBC standards in recent years. It is the only country in the region to adhere to the OECD Declaration on International Investment and Multinational Enterprises and the OECD Guidelines for Multinational Enterprises on RBC (OECD, 2025[13]). Accordingly, Kazakhstan has had a National Contact Point for RBC since 2017, see Box 2.2 (OECD, 2026[14]). Kazakhstan also adhered to the OECD Council Recommendations for the OECD Minerals Guidance in 2017 and the OECD Stakeholder Engagement Guidance in 2017, as well as for the OECD Due Diligence Guidance for Responsible Business Conduct in 2018 (OECD, 2018[15]) and to the Recommendation on the Role of Government in promoting Responsible Business Conduct in 2023. In October 2024, Kazakhstan committed to developing a declaration on RBC with expectations for investors (OECD, 2025[7]).

Box 2.2. The National Contact Point (NCP) in Kazakhstan

Kazakhstan's NCP is hosted by the Economic Research Institute under the Ministry of National Economy. The NCP has a multipartite structure, including representation from government, business, and civil society. Representatives from trade unions are called upon to participate on a case-by-case basis.

The NCP has been increasingly active since 2020. It has published the OECD Guidelines and Due Diligence Guidance on its website and has (co-)organised promotional events on RBC. It has received seven specific instances regarding alleged non-observance of the Guidelines (all in 2021-2023). Of these:

- five were not accepted for further examination;
- one was concluded without agreement as the company did not agree to participate in the NCP process; and
- one resulted in agreement between the parties.

The NCP is also playing a growing role in policy coherence on RBC in Kazakhstan For example, the NCP is also the secretariat of the National Action Plan for Business and Human Rights working group.

Source: (OECD, 2025[7]).

Kazakhstan has been a member of the EITI since 2007 (EITI, 2025[11]). In its 2025 Validation, Kazakhstan achieved a somewhat low score (56 points) in implementing the 2019 EITI Standard. The Validation noted progress for high-level public commitments to the EITI process, the establishment of a comprehensive regulatory framework for the sector, and improved transparency related to SOEs. Nonetheless, it recommended further efforts to strengthen the enabling environment for civil society participation in EITI processes and revisit broad policies on confidentiality of beneficial ownership, contract disclosure, production and exports, and signature bonuses. Kazakhstan has joined the US-led Minerals Security Partnership to boost resilience of critical mineral supply chains and participated in the launch of its successor, the Forum on Resource Geostrategic Engagement (FORGE) in February 2026 (US Dept of State, 2026[16]).

While the government has responded to instances of illegal mining, more could be done to address related risks. Kazakhstan has used remote monitoring to detect illegal mining since 2021. According to the Ministry of Digital Development and Artificial Intelligence, in 2025, satellite monitoring identified 1,845

sites of illegal subsoil use, while 2,500 cases were recorded in 2024 (The Times of Central Asia, 2025[17]; Dprom.kz, 2026[18]). According to the Ministry of Interior, as many as 4,000 illegal miners are apprehended each year (World Bank, 2023[19]). In 2026, the Ulytau regional court sentenced a man for the illegal mining and export of over 16,000 tonnes of manganese ore over three years, and related laundering of the proceeds of crime (Caspian Post, 2026[20]). A pre-trial investigation in Karaganda revealed that one enterprise in the region had been extracting iron ore without a license and illegally exporting it abroad for four years (Caspian Post, 2026[21]). Illegal operations involving foreign nationals and gold extraction are also routinely targeted by law enforcement (Tengri News, 2025[22]; Iz.ru, 2024[23]). The Subsoil Code contains certain aspects to facilitate artisanal and small-scale mining, such as simplified procedures for granting licenses and lighter requirements in terms of project documents and reclamation security, among others. Yet, coordination between regional administration and the central governments, as well as clear oversight when licences are issued is hampering actual formalisation of the sector (World Bank, 2023[19]; InBusiness.kz, 2026[24]).

Despite some progress on a range of integrity initiatives, corruption in public administration, public procurement and large-scale infrastructure remains a major concern. Kazakhstan adopted a Concept and Action Plan for 2022-26 which is monitored by the Anti-Corruption Agency, set up a whistleblower protection mechanism, and introduced mandatory corporate governance codes, bringing the country closer to international standards in many governance areas. The license allocation stage is particularly vulnerable to governance risks. In 2023, the Vice Minister of Industry and Infrastructure Development was convicted of abuse of office in connection with the illegal granting of mining rights for a nickel and cobalt deposit without competitive tendering at an artificially low price to a company affiliated with him (OECD, 2025[25]). The remaining challenges in the country's anti-corruption framework remain closing the regulatory gaps on issues such as lobbying, conflict of interest and asset declaration, lobbying and institutional independence, as well as moving beyond legal reform to implementation (OECD, 2025[5]; OECD, 2024[26]).

Enterprises sourcing from or operating in Kazakhstan have adopted RBC policies or undergone assurance processes. Some large mining companies have begun to implement supply chain due diligence in line with OECD standards. Kazzinc, a major integrated zinc producer with significant production of copper, gold, silver, zinc and lead, has been successfully assessed by the Copper Mark against the Joint Due Diligence Standard for Copper, Lead, Molybdenum, Nickel, and Zinc (JDDS) in 2023. The JDDS itself has been recognized by the London Metal Exchange as an accepted audit programme for meeting the LME's responsible sourcing requirements. Kazzinc is also a Good Delivery Refiner for both gold and silver under the London Bullion Market Association (LBMA) responsible sourcing audit programme (Kazzinc, 2025[27]). The silver refinery Kazakhmys is also included in the LBMA Good Delivery List for silver and has introduced a KPMG-designed ESG roadmap including tailings-water recirculation and mandatory mine-ventilation upgrades (agmp.kz, 2024[28]). The Ulba Metallurgical Plant, a significant smelter of tantalum, niobium and beryllium, is among the Responsible Minerals Initiative's Conformant Tantalum Smelters. Metalkol's smelting operations in the Democratic Republic of the Congo belonging to the Kazakh-owned Eurasian Resources Group (ERG) have successfully been audited by the Responsible Minerals Initiative, and its tailings reprocessing operation underwent The Copper Mark assurance process. ERG's activities in the DRC were extended in early 2026 to cooperation with SOE *Entreprise Générale de Cobalt* to cover formalisation of artisanal and small-scale mining (Omirgazy, 2026[29]). Deploying the capital and know-how of a large-scale mining firm to connect informal supply into legitimate trading channels through progressive formalisation and risk mitigation could help set an example for similar initiatives to further diversify supply chains.

However, allegations concerning Kazakh companies continue to be reported. ERG has been subject to allegations of non-compliance with local subcontracting laws (Autorité de Régulation de la Sous-traitance dans le secteur Privé, 2024[30]), environmental pollution (Njini and Rolley, 2023[31]), corruption (Kotkamp, 2025[32]) and disputes over mining project development in the DRC (Africa Mining Intelligence, 2024[33]). The company has variously denied its involvement in environmental damage and disputed NGO

claims of poor labour practices, while reaching a settlement and compensation with regulators on mining project development (Reuters, 2025[34]) and local subcontracting (Actualité.co, 2024[35]). The recent increase in tantalum imports from Central African countries into Kazakhstan has drawn attention, particularly in light of the fact that many tantalum-producing areas in the DRC have been affected by the expansion of the M23 rebel group during 2023-2025 (OECD, 2025[36]). More broadly, despite longstanding concerns about structural under-reporting of tantalum originating from the DRC and Rwanda, no significant market disruption has been observed following the escalation of conflict in producing areas. This may indicate that production from areas controlled by non-state armed groups continues to reach international markets through established processing hubs.

While Kazakhstan's mining sector is somewhat open to foreign investment, it is dominated by SOEs, in particular by Tau-Ken Samruk, created in 2009 and controlled by the Samruk-Kazyna National Welfare Fund. Until recently, Tau-Ken Samruk enjoyed priority over private companies for acquisition of subsoil rights. Privately-owned enterprises with significant state participation, such as ERG and Kazzinc, also tend to be favoured. In Kazakhstan, some ministries with ownership functions are also regulators of their respective sectors: this entails a high risk of conflict of interest, as ministers can hold positions in companies they are responsible for regulating, as well as a high risk of unfair competition practices as state actors may favour domestic incumbents over junior companies or foreign investors. Kazakhstan's EITI membership helped advance transparency in the use of mining revenues by the National Fund of the Republic of Kazakhstan, but the scope for discussion between the government, business and civil society on mining sector issues has reportedly decreased in recent years (World Bank, 2023[37]).

The Kazakh government has embarked on a substantial reform efforts aimed at enhancing the governance and performance of SOEs, but the reform plans can benefit from continued commitment to ensure their implementation. The government could remove regulatory functions from ministries that exercise shareholder rights in SOEs or shift their ownership functions out of the ministries. The development of a unified ownership entity would support informed and active state ownership, and more effective oversight of entities like Samruk-Kazyna. The majority composition of boards by government officials raises concerns about objective decision-making and the need for professionalised, independent and autonomous boards (OECD, 2024[38]). Given the risks linked to gold and tantalum supply chains, there is a need to enhance due diligence of mineral sourcing from third countries to mitigate conflict financing risks, for example through increased scrutiny of refiner due diligence audits.

The government of the Kyrgyz Republic is initiating steps to advance RBC, but increased state participation has undermined the transparency of the mining sector

RBC implementation in the Kyrgyz Republic remains at an early stage, although recent policy initiatives signal growing recognition of its importance. There are only a few examples of human rights-related corporate policies in the country. Such policies are often developed based on documents from manuals or on similar experience from other enterprises. In the mining sector, the Kyrgyz Republic was an early adopter of the EITI, and it discloses detailed data on production, revenues and license holders, but its latest EITI validation in 2024 rated overall implementation as "fairly low" (57.5 points) under the 2019 Standard, with weaknesses in outcomes, impact and stakeholder engagement (EITI, 2024[39]). In its new Strategic Development Programme for Critical Minerals through 2030, the government aims to achieve a "high" EITI rating in the mid-term through more transparent reporting. Enterprises are not widely observed to conduct assessments of the impact of their activities on human rights (UNDP, 2024[40]). Under the Law on the Subsoil, a social package is included in the project impact assessment and approval process; however, its requirements are not clearly specified, and measures to mitigate the socioeconomic impacts of projects are not delineated (International Institute for Sustainable Development, 2018[41]).

Although the Kyrgyz Republic has established formal anti-corruption frameworks such as the National Anti-Corruption Strategy 2021–24 and related agency plans, implementation remains

uneven, with gaps in areas such as conflict of interest enforcement and whistleblower protections, while recent legislative changes have undermined transparency efforts (OECD, 2024[42]). The mining sector is exposed to corruption risks. In 2025, a former Minister of Natural Resources was sentenced to eight years in prison for abuse of office through an entity financed by mining company Kumtor's profits and tasked with supporting environmental projects (The Diplomat, 2025[43]).

Licensing for artisanal and small-scale gold mining (ASGM) production is currently suspended, with only 21 individual licenses active despite an estimated 25,000-75,000 people working in the sector. The Kyrgyz Republic never ratified the Minamata Convention[1], a concern considering the significant production of mercury in the country. The gold buying sector was liberalised in 2015 and around 40 operators (mainly jewellers and dentists) are licensed to process unrefined gold for domestic use. While it is difficult to obtain exact data, internal purchases amount to an estimated 2.5 tonnes of unrefined gold, indicating a non-negligible level of activity. Discrepancies between declared jewellery production and suspiciously high related scrap (which is reportedly exempt from tax) also merit additional scrutiny. According to expert interviews, despite allegations regarding Russian gold transiting through the country, the mineral trafficking cases prosecuted by the Kyrgyz Republic only involved neighbouring countries. Nevertheless, the discrepancy in the reported value of non-monetary gold trade between the Kyrgyz Republic' declared exports and partner-reported imports reached USD 4 billion in 2024 (UN Comtrade, 2026[44]). While Comtrade data are subject to limitations, such as reporting lags, differences in national customs classifications, and the exclusion or separate treatment of certain transactions such as monetary gold, these discrepancies point to the need for further scrutiny.

State influence on the Kyrgyz Republic's mining sector has significantly increased since the nationalisation of the Kumtor gold mine in 2022. This has led to a decline in the sector's transparency, making major international mining companies reluctant to invest (World Bank, 2022[45]). Nevertheless, the Kyrgyz Republic's membership in the EITI allows for wide disclosure of information on the impacts of mining. Kyrgyzaltyn is the main SOE active in mining and refining, which operates mines directly or in joint venture with Chinese and Turkish companies. Kyrgyzaltyn's gold refinery is audited annually by the LBMA and has been reinstated on the Good Delivery List after it was suspended for failures related to its responsible sourcing programme.

The government could consider progressively raising awareness and promoting the implementation of relevant OECD RBC standards, such as the OECD Guidelines for Multinational Enterprises for Responsible Business Conduct and the OECD Due Diligence Guidance for Responsible Mineral Supply Chains from Conflict-Affected and High-Risk Areas.

Uzbekistan is strengthening RBC and anti-corruption frameworks; however, it must further tackle corruption risks, supply chain due diligence gaps and transparency shortcomings

RBC considerations are increasingly important in Uzbekistan's policy agenda. Uzbekistan recently applied for adherence to the OECD Declaration on International Investment and Multinational Enterprises (Ministry of Investment, Industry and Trade of the Republic of Uzbekistan, 2026[46]). The overall awareness of RBC is also growing in Uzbekistan, with both government and businesses working towards promoting RBC through regular events and financing. The government committed to adopt a National Action Plan on Business and Human Rights, which presents an opportunity to promote RBC in the mining sector (OECD, 2025[7]). A high-level working group on RBC has been created under the Foreign Investors Council, and the government is encouraging sustainability risk management in SOEs (OECD, 2025[7]).

The fight against corruption has intensified in recent years, notably with the creation of a dedicated anti-corruption agency in 2020 and the strengthening of SOE governance through the establishment of a merit-based selection system for board and leadership appointments. The Uzbekistan 2030 Strategy includes government commitments to reduce adverse impacts of business operations such as corruption.

As corruption remains a significant risk for potential investors, public institutions in the mining sector are paying increased attention to the issue, with Navoi MMC and the Ministry of Mining Industry and Geology scoring the highest in a ranking of corruption prevention mechanisms by the Anti-Corruption Agency (Qalampir, 2025[47]). The largest mining SOEs, Almalyk MMC (AMMC), Navoi MMC (NMMC) and NavoiUran, have adopted the International Financial Reporting Standards for their financial statements (ESG Foundation, 2025[48]).

Nevertheless, while corruption incidents in mining are rarely reported, perceptions of corruption persist (Anti-Corruption Agency of the Republic of Uzbekistan, 2023[49]). Investigative journalists found that AMMC awarded over $200 million in procurement contracts since 2022 to a network of companies incorporated in the United Kingdom, Georgia, and Singapore, many of which have unclear or seemingly inactive corporate records and are linked through common individuals, including an Uzbek table tennis official and others with no mining experience, raising questions about whether these are shell companies for proxies benefiting from political connections rather than legitimate suppliers (OCCRP, 2026[50]). Investigations such as these were enabled by Uzbekistan's procurement transparency reforms, highlighting how greater openness has given a potential boost to accountability. The application of the recently enacted legislation on conflict of interest is also seen as central to mitigating some of these risks in practice (OECD, 2024[51]) (OECD, 2025[7]). Unlike Kazakhstan and the Kyrgyz Republic, Uzbekistan is not an EITI member, but it is exploring the potential for membership (UzDaily, 2025[52]).

At the enterprise level, some Uzbek mining and metallurgical companies, also dedicated to processing and smelting, are voluntarily aligning with global sustainability benchmarks: NMMC has begun publishing sustainability reports in 2019, and it became the first Uzbek mining company to obtain an independent ESG rating in 2025 (Minex Forum, 2025[53]). NMMC has also designed roadmaps for the integration of the Responsible Gold Mining Principles and the International Code for Cyanides Management with the help of independent consultants. Both AMMC and NMMC started providing publicly accessible non-financial reporting, notably on workplace accidents. Both AMMC and NMMC hold the Good Delivery List Status at the London Bullion Market Association (LBMA) (London Bullion Market Association, 2026[54]).

Concerns have been raised on the possibility that sanctioned Russian gold is entering jurisdictions such as Switzerland or the United Kingdom, which have imposed sanctions, via countries in Central Asia such as Uzbekistan and Kazakhstan (Turuban and Soguel, 2024[55]). The Central Bank of Uzbekistan has rejected these allegations and underlined that the country did not purchase gold from abroad (Kun.uz, 2025[56])**.** Uzbekistan recognised artisanal mining in its legal framework in 2019, subject to licensing, and increased sanctions for illegal mining in 2024 introducing criminal responsibility for unauthorised extraction of minerals that is committed repeatedly after prior administrative penalties or for artisanal mining without proper permits. (The Times of Central Asia, 2024[57]; Kun.Uz, 2024[58]).

In 2024, AMMC underwent a CopperMark assessment of several RBC social and environmental criteria. The assessment identified partial gaps in a range of areas, including stakeholder engagement, business partner relationships, working hours, employee grievance mechanisms, biodiversity and protected areas, mine closure and reclamation, community health and safety, human rights, land acquisition and resettlement, cultural heritage, and, notably, significant gaps in due diligence in mineral supply chains (The CopperMark, 2026[59]).

AMMC is currently addressing these gaps, including on the development of better systems and processes for due diligence of their supply chain. The main gaps relate to how the company identifies high-risk suppliers in countries of origin or transit. The assessment reported that AMMC's copper suppliers are traders, highlighting the need of enhanced checks to identify countries of origin and transit and address any related risks.

Uzbekistan could promote the implementation of relevant OECD RBC standards, as well as the EITI. This would allow better visibility on mineral flows (and potentially related illicit financial flows), enhanced

transparency for investors and better dialogue with different stakeholders in the mining sector. Ongoing governance reforms and board professionalisation of SOEs are an emerging good practice but should be sustained and amplified.

Labour rights

Labour safety is a long-standing issue in Kazakhstan, which the government is beginning to address

Recent revisions to Kazakhstan's labour code improved the country's labour rights framework, but gaps persist. The current legislation integrates a wide range of provisions to guarantee the safety of life and health of employees. It also includes provisions for the training of personnel on occupation health and safety measures (World Bank, 2023[37]). However, significant concerns remain regarding the effective protection of workers' rights, especially for migrant workers, who face heightened risks of discrimination, wage theft, harassment, and coercive labour practices (Global Detention Project, 2025[60]). Collective bargaining and the right to strike are not guaranteed (Human Rights Watch, 2025[61]), while the country has yet to ratify ILO Convention No. 190, a treaty aimed at safeguarding workers against violence and harassment (ILO, 2026[62]). Between2021 and 2022, the number of appeals on labour rights violations grew from 53 to 288.

Kazakh trade union representatives claim that the official statistics on the mining industry underestimate the number of accidents (World Bank, 2023[37]). Kazakhstan's mining sector has continued to record industrial accidents and fatalities linked to poor labour conditions. According to the prosecutor for the East Kazakhstan region, between 2019 and 2022 174 of the 688 accidents in the region occurred in mining companies, resulting in 66 fatalities (Sergienko, 2022[63]). In 2023, 46 miners died following a methane gas explosion at the Kostenko coal mine in Temirtau, where workers had long demanded better working conditions (The Diplomat, 2023[64]). The mine, which was operated by ArcelorMittal at the time, was subsequently nationalised (RFI, 2023[65]). Conflicts linked to labour conditions have erupted in other Kazakh mines as well (Vlast.kz, 2025[66]). In 2024, 43 labour abuse allegations were recorded in Kazakh mines: occupational health and safety issues accounted for 22 allegations. These included 14 workplace death cases, eight of which were caused by one accident at the Karaganda ferroalloy plant. The copper industry faced 21 allegations linked to copper mining sites, 11 of which targeted the copper giant Kazakhmys; several Kazakhmys mines were also the subject of protests and strikes due to unpaid or underpaid wages, as well as poor labour conditions (Business and Human Rights Resource Centre, 2025[67]).

The government is stepping up efforts to improve working conditions. It recently adopted the 2024-2030 Concept of Safe Labour to improve working conditions and reduce workplace accidents, most of which occur in mining and construction. As further steps, the government could consider strengthening labour protections in the mining sector by enhancing overall safety oversight, promoting transparency around incident reporting, and providing the inspection authorities with adequate capacity and a clear mandate allowing unannounced inspections. Providing clearer minimum requirements for operational safety measures, supported by proportionate enforcement, would help to improve safety outcomes. In parallel, making complaint and grievance mechanisms more accessible and effective, including in the local languages spoken by affected workers and communities, would ensure that concerns can be raised safely.

The government of the Kyrgyz Republic supports local employment in mining but needs to strengthen labour rights protection

Accidents in the Kyrgyz mining sector result in 10-15 deaths per year (World Bank, 2023[68]). Under Kyrgyz labour legislation, employers – including mining companies – are required to take comprehensive

measures to safeguard the life and health of employees while performing their duties. The existing grievance mechanism is reported to be ineffective due to bureaucratic complexity and a perceived lack of interest from officials. Chinese companies operating in the Kyrgyz Republic have frequently been accused of discriminatory employment practices towards Kyrgyz workers (World Bank, 2023[68]). The 2022 reform mandating all mining projects to employ 90% of Kyrgyz workers is also reported challenging to comply with during the design and construction stages. In its new Critical Minerals Programme, the government recognises that this provision has also limited the talent pool in the mining sector. Despite this fact, the Programme targets to create 30,000 new jobs in CRM mining by 2040.

The Kyrgyz Republic could also consider strengthening the existing grievance mechanisms and providing its labour inspection body with greater capacities and a clear mandate to carry out unannounced inspections.

Uzbekistan is improving its labour standards, but gaps remain in health, safety, freedom of association and gender equality

Uzbekistan's labour rights framework has improved, but challenges remain. Uzbekistan has acceded to several ILO conventions in recent years, and the labour code was substantially updated in 2023. The government increased financing for labour inspections and installed digital safety monitoring systems in mines. However, limited freedom of association remains an issue. The threshold for forming a union stands at 3 000 workers, limiting this possibility for many occupations; moreover, operating a union independently from the Federation of Trade Unions of Uzbekistan remains difficult. Gender equality also remains a significant challenge, the gender pay gap being as high as 39% in 2024 (compared to 20% in Kazakhstan) (OECD, 2025[7]). The number of abuse allegations has increased in Uzbekistan's mining sector, though the meaning of this is hard to interpret: it may be a result of greater willingness to report, as opposed to increasing instances (Business and Human Rights Resource Centre, 2025[67]). In the first six months of 2024, 728 violations of health and safety measures were recorded by Uzbek authorities at AMMC plants. AMMC, the country's second-largest mining SOE in terms of revenue, has a substantial record of abuse allegations and fatal workplace accidents.

The government could continue reforming its labour rights framework by easing the restrictions on trade union organisation and making it easier for trade unions to operate outside the Federation of Trade Unions of Uzbekistan. Finally, the authorities could consider enhancing the involvement of different stakeholders, including independent NGOs, in deliberations about mining projects, to better assess the potential risks and impacts of mining projects.

Meaningful engagement of local communities

Local community engagement is required by law in Kazakhstan, but transparency is lacking on decision-making and compensation

The participation of local communities in mining projects in Kazakhstan is ensured by the Environmental Code and the Code on Subsoil and Subsoil Use (hereinafter "SSU Code"). The Environmental Code requires any project with environmental impact (including mines) to undergo comprehensive Environmental Impact Assessments (EIA) with at least 30 days of public consultations and outlines general provisions for community consultations, notably through the Rules for Conducting Public Hearings. Local communities should be informed about the localisation of the project as well as about all the modalities of the public hearings. The SSU Code mandates the participation of local executive and environmental bodies to all the stages of the EIA process. Local authorities are required to publish the minutes and recordings of public hearings on their website, and the comments and suggestions made during the hearings are to be taken into account by the competent authority conducting the EIA.

Nevertheless, civil society actors report that many EIAs are not fully disclosed or are hard to access on frequently changing government websites (World Bank, 2023[19]). Local authorities often do not have the capacity to conduct public hearings and fail to provide hearing records to the public, while companies often under-advertise public hearings, schedule hearings during working hours, do not take into account the comments made during the hearings, and provide incomplete or unclear information (World Bank, 2023[37]). Moreover, enforcement agencies often lack capacity or will, resulting in inconsistent application of penalties. For instance, high environmental fines exist on paper but have rarely been used effectively, reducing their deterrent effect (OECD, 2025[7]).

The SSU Code states that if a mining project is located 1 km or less away from a settlement, the project initiator must enter into a Community Development Agreement with local government bodies and establish measures to support the affected population. However, the current legislation does not specify the measures that should be considered for economic and social support to these populations, and the absence of a standard form of such an agreement impedes adequate assistance. The Community Development Agreements are concluded between companies and the local government bodies (akimats), often without the participation of local communities as such; this has led to non-transparent expenditures of social contributions from companies to akimats, while akimats themselves often tend to spend these funds with limited accountability to the local communities and, critics claim, use the funds outside of their intended purpose. As the amount of social contributions is determined by the akimats, this raises corruption risks and may incentivise the satisfaction of immediate financial needs. Meanwhile, the absence of local communities during the negotiation process can lead to agreements which neglect labour and environmental impacts of mining projects (World Bank, 2023[37]) (Business and Human Rights Centre, 2024[69]).

There is no formal obligation to carry out Social Impact Assessments and there are no clear guidelines for compensating or resettling communities affected by mining projects, which can lead to conflicts, unreasonable compensation demands, or community grievances (Business and Human Rights Centre, 2024[69]). Community benefit agreements are informal – mining companies contribute 1-2% of project costs to local budgets by law, but this process lacks transparency and there have been complaints from communities about where the money goes (World Bank, 2023[37]).

While victims of adverse impacts are increasingly turning to Kazakhstan's NCP, other non-judicial grievance mechanisms are also available. The 2011 Law on Mediation offers avenues for protection and redress in cases involving violations of human rights and freedoms. Although mediation is not mandatory in legal proceedings, courts strongly encourage parties to attempt mediation before pursuing litigation. At the individual firm level, most large companies report having mechanisms in place to receive and address grievances. However, according to the National Baseline Assessment conducted under the NAP BHR, only about half of surveyed companies publicly provide information on their grievance mechanisms. Public commitments to remediate adverse impacts are rare, and few companies disclose clear information on the procedures governing how grievances are handled. (OECD, 2025[7]).

The government could consider requiring mining companies to take into account the results of public hearings and to provide an explanation in case of refusal to implement a suggestion made during the hearing. The government could consider more support for local government bodies for them to be able to organise regular public consultations and provide full accessibility to the relevant documentation. Finally, the government could consider involving local communities and relevant NGOs during the negotiations on Community Development Agreements, which would permit a more transparent allocation of social contributions.

The Kyrgyz Republic has a well-established community involvement framework for mining projects, but its perceived ineffectiveness undermines stakeholder trust

The Kyrgyz Republic has a record of involving local communities in mining process, although it has been less pronounced in recent years. The introduction of social package agreements in 2012, which mandated subsoil users to reach an understanding with local self-government bodies over mining projects, was an important step forward in terms of local community involvement into mining. The introduction of these agreements also led mining companies to be more involved into social and economic projects aimed at improving the living conditions of local communities, such as educational training, infrastructure projects and employment (World Bank, 2023[68]). The government has reportedly demanded specific requirements from large investors, such as quotas on local employment and seats on the boards of directors (U.S. Department of State, 2025[70]). The new Strategic Development Programme for Critical Minerals mandates social impact assessments (SIA) for mining projects. However, some Kyrgyz NGOs claim that the government has tried to weaken civil society and tighten its grip on the mining sector in recent years, resulting in less dialogue between mining companies and communities: civil society representatives fear that the consultation processes might be emptied of their substance by the government if it decides to conclude major new mining projects (PWYP Kyrgyzstan, 2024[71]).

Local communities appear to be wary of foreign mining companies, which are seen as exploitative, while trust in public officials is also low (World Bank, 2023[68]). Integrity mechanisms are not well defined in the current legislation, and relevant laws are reported to not work in practice (World Bank, 2023[68]). There exists a widespread belief that government bodies grant licenses and permits to foreign companies through corrupt practices, while not sharing mining revenues with the local population. Conflicts between local communities and Chinese companies have been frequent in recent years, with the companies accused of corruption and lack of transparency (World Bank, 2023[68]; Furstenberg, 2021[72]).

Overall, concerns remain that local communities are excluded from discussions on mining projects: although they can communicate with mining companies through village councils, citizens complain that companies use legal ways to avoid fulfilling their promises and to ignore the local communities' proposals. The dialogue with the government is also unsatisfactory, as it lacks regularity and often involves a small number of activists, without considering the larger communities. Beyond the social package agreements, community development agreements exist only between large mining companies and public authorities, which creates opportunities for corruption and revenue misuse. Companies are also reported to only hold regular public hearings in the early stages of mining projects to obtain a "social license" to operate from the local population and then consult exclusively with public authorities during the following stages (World Bank, 2023[68]).

The Kyrgyz Republic provides for public participation in the Environmental Impact Assessment (EIA) process. According to current legislation, any member of the public can request a public review of the process. This public review, although it should be self-funded and should not take longer than a month, provides local communities and NGOs with a platform for comments, suggestions and inputs. However, the public review is only advisory, the state having no other obligation besides publicly acknowledging that it has occurred. In addition, there is no public record of any mining project in the Kyrgyz Republic *not* being approved as a result of an EIA (World Bank, 2023[68]).

Several companies operating in the Kyrgyz mining sector have developed Corporate Social Responsibility (CSR) programmes aimed at improving the well-being of local communities and revitalising local economies. The SOE operating the Kumtor mine has developed a programme revolving around the development of local agriculture, the support for SME growth, the collaboration with young people for the development of local educational initiatives, and the protection of the local environment (World Bank, 2023[68]). Among foreign investors, the Turkish Eti Bakir which operates the Tereksay gold mine has also developed an ambitious programme of water resources, flora and fauna protection, while

getting involved in the social life of the local community: the company is currently financing the construction of a new school which will host 225 students.

The government could consider ensuring a regular public dialogue between local communities and local public authorities on mining projects, as well as involving local communities into community development agreements with large mining companies. The government could also consider ensuring that mining companies continue the dialogue with local communities beyond the early stages of mining projects, and enforcing penalties if companies fail to do so. Finally, the government could consider extending the one-month-deadline for submitting the EIA public review and making the results of this public review mandatory.

Local community involvement in Uzbekistan's mining projects remains limited, despite recent progress

Traditionally, local communities in Uzbekistan have had little voice in decision-making for mining projects, given the centralised decision-making and limited civic space. However, laws such as the Law on Environmental Impact Assessments mandate early consultations for high-risk projects. Similarly, the new Law on the Subsoil explicitly requires public consultation prior to the commencement of mining projects. In practice, stakeholders report that consultations are not always carried out, and current regulations do not ensure stakeholder engagement in line with international standards, such as participatory monitoring (OECD, 2025[7]).

The new law on Environmental Expertise, which entered into force in 2025, provides for public consultations during the environmental assessment stage of mining projects (under the name of "Public Environmental Expertise"); however, these public hearings only serve a consultative purpose, without any obligation for the state to take their results into account (Lex.uz, 2025[73]). There is no publicly available record of recent local community backlash against any mining project: some wariness may be observed towards Chinese gold mining companies investing in Uzbekistan, but it remains largely confined to the online sphere, without any repercussions on the ground (Global Voices, 2025[74]).

While Uzbekistan does not have a dedicated grievance mechanism specifically for RBC issues, the Ombudsman plays an important role in remedying violations. In 2025, the Ombudsman received 26,372 appeals. (Uzbekistan Authorized Person of the Oliy Majlis for Human Rights, 2026[75]) State-owned enterprises, like other public institutions, are legally required to establish complaint mechanisms, and some provide public information on how they handle complaints. By contrast, grievance mechanisms appear to be less systematically established and disclosed among private commercial enterprises (OECD, 2025[7]).

The government could consider making the Public Environmental Expertise results mandatory for consideration during the environmental assessment process. The government could also consider introducing some mechanisms of public dialogue between mining companies, local public authorities and local communities around mining projects, which would allow for better information about the projects' risks and potential impacts and better consideration of local communities' needs.

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Note

[1] The Minamata Convention on Mercury is a global treaty aimed at protecting human health and the environment from the adverse impacts of mercury pollution. It was adopted in 2013 and entered into force in 2017.

3 Managing environmental risks in the CRM sector

The expansion of the mining sector in Central Asia could exacerbate existing environmental risks. The reduction of greenhouse gas emissions, the sustainable use of water resources and the management of mining waste and tailings are among the main challenges that governments will have to address to ensure the development of viable CRM sectors. Current findings show that, while national legislation and strategies are attempting to tackle these challenges through targets and policy plans, governments could be more ambitious in setting sector-specific goals and providing clear incentives for mining-sector actors to develop more sustainable practices.

The alignment of mining practices with environmental and broader sustainability goals will be pivotal as governments advance their CRM agendas

While CRMs are central to the green transition, mining and processing are responsible for a range of environmental and sustainability challenges, including in Central Asia. These include land degradation, high greenhouse gas (GHG) emissions - some being hard-to-abate -, water and air pollution, biodiversity loss and hazardous waste (Eurasianet, 2024[1]) (East Asia Forum, 2025[2]) (Global Voices, 2024[3]). Mining activities can also require intensive use of water resources, which is a challenge in regions already under severe water stress (The Times of Central Asia, 2025[4]). Managing environmental risks should therefore be embedded in any government plans for critical minerals development, ensuring that these align with climate mitigation and adaptation goals, as well as objectives relating to sustainable management of natural resources, biodiversity protection, and conserving and protecting water for other economic and social uses.

Central Asia is highly exposed to climate and environmental risks. The region has already experienced major environmental disasters (as, for example, the desiccation of the Aral Sea) and is currently facing numerous environmental challenges, such as the receding levels of the Caspian Sea (OECD, 2025[5]), desertification (World Bank, 2023[6]) (UNCCD, 2023[7]) and glacier melt (France24, 2024[8]) (Jouberton, 2025[9]). Legacy from past mining activities and local conflicts over the use of natural resources or environmental impact of mining operations highlight the need for Central Asian governments to address future risks stemming from the development of critical minerals sector.

The detrimental impact of mining on sustainability creates a paradox at the core of Central Asia's CRM agenda: net-zero pathways rely on a rapid expansion of mining and processing to supply transition minerals, yet current practices are highly carbon- and resource-intensive and can aggravate climate and environmental risks in an already fragile region. Unless mining and processing are progressively decarbonised and made more resource-efficient, and environmental management related to pollution from mining sites and waste storage is brought up to international standards, efforts to position Central Asia as a supplier of "green" minerals risk undermining the very climate and sustainability objectives they are intended to support (Mining Digital, 2024[10]).

As environmental risks and their social consequences translate into economic and corporate risks, failing to address those at the policy level can lead to competitiveness issues as countries seek to attract investments in critical minerals development. In Central Asia, mining companies are increasingly facing demands to adopt risk mitigation measures to limit negative impacts on local communities and to complement their mining activity with social projects aimed at improving the quality of life in neighbouring localities. Public consultation processes and community approval are central components of companies' "social license to operate", which is becoming a major criterion for quality investment and a prerequisite for international financing of mining and mining-related projects. A robust environmental policy framework addressing risks in the mining sector plays a role in de-risking investment in critical minerals development.

Central Asian governments' ongoing efforts to develop CRM strategies offer a unique opportunity to embed strong environmental and sustainability safeguards into mining policies and regulations. The detrimental effects of mining on the environment, and subsequently, on local communities, typically extend beyond the life of a mine, which itself spans decades (OECD, 2019[11]). Governments have all adopted green economy and climate mitigation and adaptation strategies, recognising the importance of tackling climate change and environmental risks for sustainable economic growth. Kazakhstan, Uzbekistan and the Kyrgyz Republic have adopted or are in the process of adopting net-zero strategies. Given the mining sector's economic significance and environmental footprint across the region, governments' ability to align any plans for CRM development with their environmental and sustainability goals will be critical to enable that future CRM sectors effectively contribute to sustainable economic growth.

GHG emissions

Mining leads to high levels of greenhouse gas (GHG) emissions. Although Central Asian countries are modest contributors to global GHG emissions, the geographical features of the region make it particularly vulnerable to their subsequent impacts. GHG emissions may cause prolonged droughts and heatwaves which threaten rain-fed agriculture, still a dominant sector in Uzbekistan, and steppe ecosystems, vital to Kazakhstan's biodiversity. Mountainous countries such as the Kyrgyz Republic may be threatened by other impacts of increased GHG emissions, such as glacier retreat and landslide risks. Moreover, GHG emissions may have negative impacts on the availability and quality of water resources, as rising emissions lead to altered river regimes and water scarcity, putting pressure on rural livelihoods in a region already severely touched by desertification. Finally, GHG emissions present an important health risk, especially in communities leaving near mining sites, where risks of lung cancer and water-borne diseases are exacerbated.

Water stress and water pollution

Mining operations contribute to water stress, one of the main environmental challenges in Central Asia. The situation is particularly acute in Uzbekistan, where mining operations contribute to water overuse and water pollution through inefficient operations of wastewater management: according to the World Resources Institute (WRI) data, Uzbekistan ranks among the 25 countries most vulnerable to water stress. Water mismanagement also leads to desertification, as the use of aging water-supply infrastructure leads to ineffective land rehabilitation. Other impacts of mining on water resources include acid water drainage, notably in Kazakhstan, where it affects areas well beyond mining sites and their surroundings and puts populations in danger (Kunarbekova, 2024[12]). The Kyrgyz Republic experiences the same issues as its neighbours, which are nevertheless coupled with the country's particular geography, resulting in many mining projects being located in the upper part of watersheds, making their environmental impact potentially broader than the immediate vicinity of mining operations.

Waste and tailings management

Kazakhstan, the Kyrgyz Republic and Uzbekistan are home to large numbers of waste and tailings storage facilities and dumps. All three countries are uranium producers (the Kyrgyz Republic lifted its ban on uranium mining in 2024), Kazakhstan and Uzbekistan being among the world leaders in this sector. This situation presents a considerable risk of radioactive contamination for local communities and ecosystems (UNECE, 2024[13]). Even if mine waste and tailings are properly managed in waste dumps and storage areas, high rainfall can cause dams and earthworks to fail, leading to discharges of contaminated water into the water table (OECD, 2019[11]).

The management of mining waste and tailings remains a significant challenge. In the Kyrgyz Republic, the State Cadastre of Mining Industry Waste counted 92 facilities with toxic and radioactive mining waste in the country; waste mismanagement in the past has led to a significant decline in biodiversity. Kazakhstan and Uzbekistan are facing similar problems, reflecting the scale of their uranium production.

Chapter outline

This chapter will examine all three risks in detail, identify opportunities and challenges for Kazakhstan, the Kyrgyz Republic and Uzbekistan, and offer general recommendations.

Keeping levels of greenhouse gas emissions aligned with climate goals

Carbon and energy intensity of national economies and industrial contribution to GHG emissions

Mineral and metal production accounts for around 10% of global GHG emissions. Under the Net Zero Emissions (NZE) scenario, rising demand for Energy Transition Metals (ETMs) is expected to increase the overall carbon footprint of mineral production, with GHG emissions from copper and other metals projected to double by 2050 (World Bank, 2023[14]).

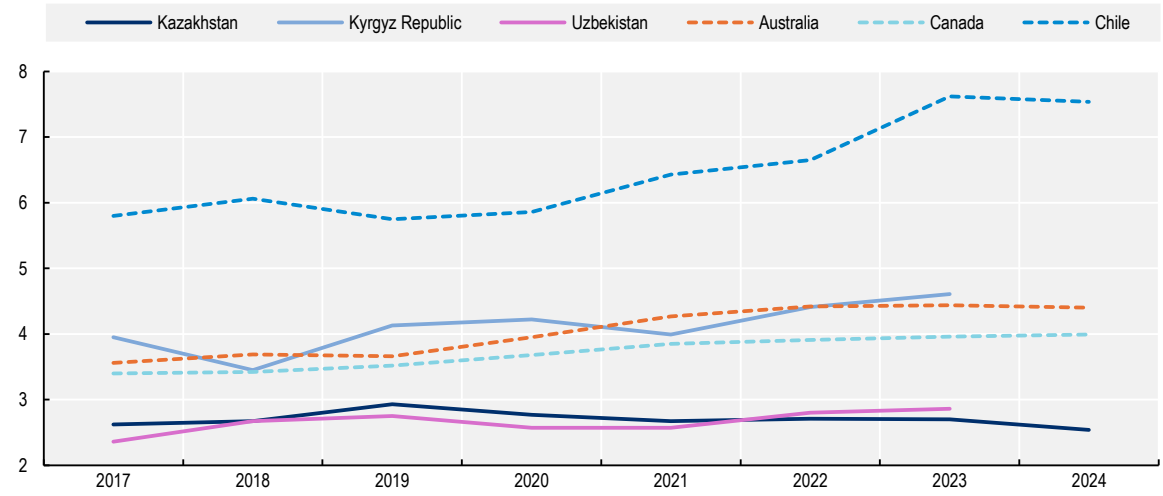
Central Asian countries have all committed to GHG emission reduction under the Paris Agreement. The total contribution of Central Asian countries to global emissions is relatively low. In 2023, Kazakhstan accounted for 0.7% of global CO_2 emissions from combustible fuels, Uzbekistan for 0.3%, and the Kyrgyz Republic for a negligible share, with the three together representing only about 1% of global emissions (IEA, 2025[15]). Nevertheless, recognising the risks climate change is posing to the environment and economies, as well as concurrent effects of GHG emissions such as pollution, Central Asian countries are all parties to the Paris Agreement and have adopted Nationally Determined Contributions (NDCs). Several of them have pledged to reach net zero by mid-century. Fulfilling these commitments will necessitate a substantial transformation of their industrial systems, along with their energy generation and transport infrastructure (OECD, Forthcoming[16]).

Achieving convergence with OECD levels of carbon productivity will require Central Asian economies to decouple economic growth from GHG emissions. Despite modest global emissions contribution, the economies of Kazakhstan, the Kyrgyz Republic and Uzbekistan remain heavily carbon-intensive relative to both output and population, largely due to their reliance on outdated, fossil-fuel based energy infrastructure. Based on OECD data on production-based carbon productivity (see Figure 3.1), Kazakhstan and Uzbekistan generated respectively 2.7 and 2.86 USD per unit of CO_2 emitted in 2023, performing below such peers as Canada (3.96 USD) and Australia (4.44 USD) in the same year. Kazakhstan and Uzbekistan are structurally more reliant on fossil fuels, as they have only been generating between 2 and 3 USD per unit of CO_2 since 2017. Thanks to its large hydropower sector, the Kyrgyz Republic performs better in this respect, with a production-based carbon productivity on par with Canada and Australia (4.61 USD in 2023). All three countries nevertheless generate considerably less revenue per unit of CO_2 than Chile (7.62 USD in 2023).

Carbon productivity and energy productivity are closely related in Central Asian countries, where fossil fuel reliance is compounded by other factors including infrastructure wear and tear, geographic and climatic conditions affecting energy distribution systems, and national economic structures. (see Figure 3.2). The Kyrgyz Republic and Uzbekistan, despite having a smaller GDP per capita than Australia and Chile, display higher energy intensity numbers in 2022 (1.66 kWh/USD for the Kyrgyz Republic and 1.51 for Uzbekistan in 2022, against 1.24 for Australia and 1.12 for Chile in the same year). This reflects their reliance on very emissive economic activities like mining, though Chile and Australia are also major mining economies. Kazakhstan, while having a GDP per capita comparable to that of Chile (26,492 USD against 22,741 USD in 2022), presents higher energy intensity numbers (1.63 kWh/USD against 1.12 in 2022); the comparison between Kazakhstan (1.63 kWh/USD) and Australia (1.24 kWh/USD), a country with a much higher GDP per capita, is even more revealing.

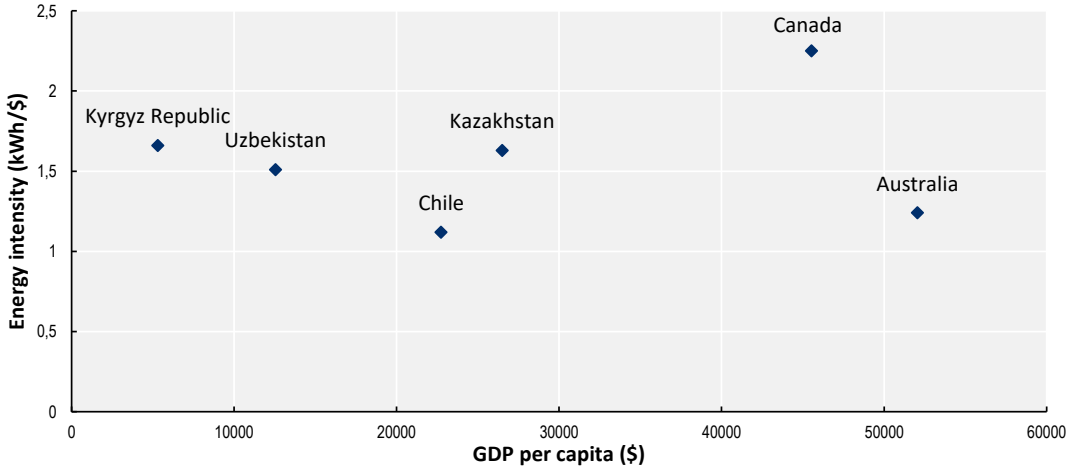
Figure 3.1. Production-based CO_2 productivity (2017-2024)

USD per unit of CO_2



Source: (OECD, 2025[17])

Figure 3.2. Energy intensity to GDP per capita, 2022



Source: (Our World in Data, 2022[18])

Available data show that the Kyrgyz Republic presents a lower share of GHG emissions from industry in total GHG emissions (7.7% in 2023) than Kazakhstan and Uzbekistan (14.8% and 11.2% respectively) (EDGAR Database, 2025[19]). This could reflect both historical pressure from Kyrgyz civil society to reduce industrial pollution in the country and the modest size of the industrial sector in the Kyrgyz Republic compared to Kazakhstan and Uzbekistan. Kazakhstan also presents a higher share of emissions from the power sector (34.6% in 2023, well above Uzbekistan's 22.3% and the Kyrgyz Republic's 12.2%), which indicates Kazakhstan's continued reliance on hydrocarbons to generate electricity (EDGAR Database, 2025[19]). Overall, Central Asian mining sectors are characterised by several hard-to-abate industries, such as iron, aluminium and zinc in Kazakhstan, copper in Uzbekistan, and gold in all three countries: challenges for GHG emissions reduction in these industries include the use of diesel-fuelled

heavy mobile equipment (haul trucks, loaders and drilling rigs), the energy intensity of such processes as ore crushing and grinding, the use of explosives and chemical reagents, and the remote location of many mines which are situated off-grid or at weak grid edges. Therefore, specific measures will be required for these sectors.

In this context, mobilising current and future mining operators to invest in energy-efficiency measures, low-carbon technologies, and cleaner energy sources is a key lever for enhancing industrial productivity and long-term competitiveness. High energy intensity is not only a constraint on the achievement of greenhouse-gas mitigation targets, but also a material economic and trade-related risk. As mining output expands, energy tariffs increase in the context of national energy-sector reforms, and climate-related trade instruments, such as the Carbon Border Adjustment Mechanism (CBAM), are progressively implemented, such investments become critical to containing production costs, preserving access to export markets, and maintaining competitive positioning within carbon-constrained global value chains.

Sectoral climate targets in policy planning

In spite of increasing climate ambitions and supporting plans, measures supporting the decarbonisation of the mining sector remain limited

Kazakhstan has set pollution reduction objectives for its largest industrial emitters (see Annex 3.A). It is the only Central Asian country with specific GHG emission reduction objectives for its largest mining enterprises. The Action Plan for implementing the Concept for the Transition of the Republic of Kazakhstan to a "Green Economy" for 2024-2030 sets emission reduction objectives for the 50 most polluting enterprises in the country, including:

- Qarmet, Steel Department (Qarmet is an SOE operating Kazakhstan's largest coal mine in Temirtau, as well as several steel enterprises): the enterprise must reduce emissions from 285 thousand tons in 2021 to 149 thousand tons by 2027.
- Kazakhmys, Zhezkazgan copper smelting plant (Kazakhmys is Kazakhstan's largest copper producer): the enterprise must reduce emissions from 63.2 thousand tons in 2021 to 31.06 thousand tons by 2025.
- Kazakhmys, Balkhash copper smelting plant: the enterprise must reduce emissions from 75.2 thousand tons in 2021 to 31.1 thousand tons by 2025.
- Kazzinc, Öskemen Metallurgical Complex (Kazzinc is Kazakhstan's largest zinc producer): the enterprise must reduce emissions from 26.299 thousand tons in 2021 to 22.5 thousand tons by 2025.

Kazakhstan's planned Emissions Trading System (ETS) reforms, including the reduction of yearly free emission allowances, can incentivise mitigation in the mining sector. The ETS covers approximately 42.9% of national greenhouse gas (GHG) emissions and includes more than 200 industrial facilities from major sectors such as oil and gas, mining, power generation, metallurgy, and chemicals (Kazenergy, 2023[20]; UNFCCC, 2025[21]). In line with its NDC 3.0 ambitions, Kazakhstan is planning to accelerate the decrease of annual free allowances, with a planned annual reduction of 3.41% through 2030 (UNFCCC, 2023[22]). A gradual phase-out of free allowances would address existing over-allocation, as mining currently uses only about 70% of its allocated quotas, and would steadily raise carbon costs, creating stronger incentives for investment in decarbonisation. Other considered reforms, including market stabilisation measures, can further increase carbon pricing under the ETS and incentivise measures to reduce GHG emissions from mining companies. Kazakhstan plans to achieve economy-wide carbon neutrality by 2060, which remains an ambitious target considering that the country remains among the top 20 GHG emitters worldwide, and among the top 5 for carbon emissions relative to GDP and per capita

emissions (Adilet, 2024[23]). Ongoing efforts to develop a roadmap for achieving this objective could catalyse GHG emission reductions in the mining sector, particularly if a clearly defined sectoral contribution is established.

Uzbekistan's latest national strategies include ambitious targets for GHG emissions. The Uzbekistan – 2030 Strategy sets a general target to reduce GHG emissions by 30% by 2030 compared to 2010 levels. The NDC 3.0, submitted in November 2025, further sets an unconditional objective of 50% GHG emissions reduction by 2035 and a net-zero target by 2055. The plan mentions GHG reduction in the mining sector, although it does not flesh out specific quantitative sectoral targets or clear measures. The government is developing a Long Term-Low Emission Development Strategy, which could support the development of a sectoral decarbonisation plan.

Uzbekistan's largest mining SOEs are developing climate plans, with specific GHG emission reduction targets. The mining SOEs in Uzbekistan are working to develop their own climate goals, while also implementing international green management standards such as ISO, IFC, GISTM and GRI. The Almalyk MMC (AMMC) has set a target of reducing its GHG emissions by 15% by 2030 (UNFCCC, 2025[24]) and by 30% by 2050. The company is currently developing a decarbonisation strategy, with the support of international partners. Financiers, though their financing conditions, can drive climate mitigation measure adoption, as exemplified in recent investment projects: AMMC's new copper smelter, financed by a European bank, is planned to be equipped with GHG capture facilities, which will allow to avoid 90% of GHG emissions. The Navoi MMC (NMMC), Uzbekistan's largest gold producer, has elaborated a climate strategy by 2030 and undergoes regular third-party inspections and audits to keep track of progress. Recently, the company conducted a climate-risk assessment and is developing a strategy for mitigating identified risks.

The Kyrgyz Republic's NDC 3.0 updates national GHG emissions reduction targets and sets broad objectives for the industrial sector, but mining is not mentioned in the document. The plan outlines an unconditional reduction of GHG emissions of -18% by 2030 and a conditional reduction of -30% compared to a BAU scenario. For 2035, the target for a further unconditional reduction of GHG emissions is set at -16% and a conditional reduction with additional international support is set at -39%. The NDC also states some specific objectives for the industrial sector, such as the launch of a pilot decarbonisation project for 20 industrial enterprises, the creation of a system for the inventory and monitoring of GHG emissions in industry, and the implementation of stimuli for lower-carbon industrial activity (UNFCCC, 2025[25]).

Climate objectives are absent from national critical minerals strategies

Central Asian national mining development strategies do not integrate GHG emission reduction objectives. Kazakhstan's Comprehensive Plan for the Development of the Rare and Rare Earth Metals Industry for 2024-2028 predominantly focuses on industrial development but does not refer to the alignment of sectoral development with climate objectives (Adilet, 2023[26]). The Kyrgyz Republic recently adopted the Strategic Development Programme for Critical Minerals through 2030, which incorporates environmental provisions. These provisions, however, mainly focus on alignment with EITI and other international standards, expanding opportunities for green financing and improving general environmental rankings, while GHG emissions are not mentioned in the document. Uzbekistan does not yet have a CRM strategy, but its draft project supported by the Boston Consulting Group has been reported to include environmental provisions.

Aligning the development of critical minerals with national climate goals requires articulating plans for GHG emissions reduction and mining development. To this end, governments should consider integrating GHG emission reduction targets, as well as clean energy, energy efficiency and clean technology adoption goals in their critical minerals' development plans. Given the importance of the mining and metals sectors in Central Asian countries, investment interest from international trade partners and

the carbon- and emissions-intensity of mining operations, there is a strong case to prioritise the development of sectoral decarbonisation plans laying out mining sectors' contributions to national GHG reduction and net zero targets. Countries can also consider integrating references to climate goals in their CRM strategies, as well as renewable energy development, and other measures underpinning decarbonisation. They could envisage embedding measures supporting the adoption of technologies such as carbon capture and use of renewable hydrogen for specific industrial processes, as well as digital technologies for the monitoring of processes such as grinding, crushing and ventilation. Any investment incentives in the mining sector should include conditions pertaining to their alignment with national climate goals, while efforts to attract international investment could include specific emphasis on sustainable technologies. The Kyrgyz Republic and Uzbekistan could follow the example of Kazakhstan and set GHG emissions reduction targets for the largest emitting mining companies. Uzbekistan could consider outlining more specific targets to reduce GHG emissions in industrial processes. The experience of Chile provides a good example of climate ambition integration in mining sector development plans (seeBox 3.1).

Box 3.1. Chile's climate framework for the mining sector

Chile is the world's first copper producer and a major lithium producer planning for a substantial expansion of its lithium industry. The country pledged to reach carbon neutrality by 2050 and to exit coal mining by 2040. Various initiatives supporting the decarbonisation of the mining sector have already been implemented, such as the Energy Efficiency in Mining project (2019), which aimed at providing technical advice and trainings to mining companies.

Chile's latest NDC provides specific decarbonisation targets for its mining industry. CO_2 emissions are planned to be reduced by 57% in open-pit copper mines, 74% in underground copper mining, and 52% in other mining activities. The NDC encourages electric vehicle use in mining, thermal electrification and hydropower. Renewable energy use is a key element, the NDC projecting to reach 90% of renewable energy in large mining operations by 2030. The objective for carbon neutrality in mining is set by 2040, ten years before the overall country goal.

Industry and mining remain the largest energy consumers in Chile, accounting for 38% of all energy use in 2020, a 18% rise compared to 2010-2020 levels. Therefore, the country has set the target to reduce GHG emissions from industry and mining by 70% by 2050 compared to 2018 levels. To that end, the government has been encouraging renewable energy use. According to the PEN, at least 90% of energy for heating in industry must come from low-carbon sources such as solar by 2050. In 2021, renewable energy already accounted for 44% of mining electricity consumption and was expected to exceed 60% by 2025.

Chile's carbon tax on stationary GHG emission sources entered in force in 2017 and allows offsets for compliance. The tax applies to facilities emitting more than 25,000 tonnes of CO_2 per year or more than 100 tonnes of particulate matter per year. The tax rate stands at 5 USD per tonne of CO_2, which is considered low by international standards: the government proposed to raise it to 35-40 USD per year by 2030.

Source: (Villarino, 2025[27]), (IGF, 2024[28]), (IGF, 2024[29]), (Canadian Mining Journal, 2025[30])

Governments could also support the controlled experimentation of low-carbon innovation in the mining sector, particularly the use of renewable hydrogen to decarbonise operations where alternatives remain limited or prohibitively expensive. Kazakhstan and Uzbekistan are already developing large-scale renewable hydrogen projects, with growing technical expertise in major SOEs, such as KazMunayGas in Kazakhstan and Uzkimyosanoat in Uzbekistan, that could be leveraged to pilot applications in mining. Renewable hydrogen offers multiple decarbonisation pathways: powering heavy

mobile equipment such as haul trucks through hydrogen fuel cells, providing long-duration renewable energy storage, supplying on-site electricity generation, and acting as a reductant and high-temperature heat source in carbon-intensive downstream industries like steel and copper production. Mongolia's experience piloting a 1.5 MW electrolyser at Oyu Tolgoi, one of the world's largest copper and gold deposits, further illustrates the potential for early adoption to support mine-site energy needs. Positioning major mining operations as early off-takers of renewable hydrogen would help create an anchor domestic market for this emerging technology, accelerating cost reductions, strengthening local value chains, and advancing national and sectoral GHG mitigation goals.

The regulatory frameworks for GHG emissions in mining are ambitious but contain important gaps

The implementation of emissions trading systems (ETS) to reduce emissions in carbon-intensive sectors such as mining and metallurgy is under way (see Annex 3.B). Kazakhstan's current environmental regulatory framework provides for a well-developed ETS, with enterprises subject to its quotas being required to develop a monitoring plan for their GHG emissions, while the results of GHG inventories must undergo a verification process. In Uzbekistan, the government has recently adopted a series of new laws, including the Law "On Limiting Greenhouse Gas Emissions" which sets the basis for the creation of an ETS. The current GHG-related legislation in the Kyrgyz Republic stipulates that nature users can use GHG emissions sources only if they possess a sufficient volume of maximum permissible emissions (quotas). However, these requirements do not correspond to the existence of a market-based emissions trading system as in Kazakhstan or Uzbekistan.

Some regulatory gaps in mining legislation may nevertheless be observed. The current environmental legislation of Kazakhstan, while mandating environmental screening for mining activities, does not include GHG emissions impacts into accounting during the EIA process (Adilet, 2021[31]). Moreover, GHG emissions generally do not require specific ecological permits in Kazakhstan or in Uzbekistan (Lex.uz, 2025[32]). The Kyrgyz Law On State Regulation and Policy in the Field of Emission and Absorption of Greenhouse Gases mandates public participation for decisions at the stages of development, approval and implementation of climate projects, a provision absent from the current Kazakh and Uzbek legislations on GHG emissions management (Government of the Kyrgyz Republic, 2022[33]).

As further steps, the three governments could consider establishing specific ecological permits for GHG emissions from mining. The Kyrgyz Republic could follow Kazakhstan and Uzbekistan and consider creating a genuine emissions trading system (ETS) to be able to effectively incentivise GHG emissions reduction. Kazakhstan and Uzbekistan could in their turn follow the Kyrgyz legal framework and consider establishing mechanisms of public consultation regarding GHG emissions during the development, approval and implementation of mining projects.

Environmental regulations, Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs)

Strategic Environmental Assessment (SEA) refers to "analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter linkages with economic and social considerations" (OECD, 2006[34]). The main aim of SEA is to integrate environmental considerations alongside economic and social ones into strategic planning and decision-making. On a government level, SEA processes can be integrated not only into broad strategies and plans, but also in budget support programmes, mining-specific policy reforms, mining policies, mining investment plans and so on. SEAs are different from Environmental Impact Assessments (EIAs): while SEAs assess policies, plans and strategic programmes and integrate environmental considerations before strategic directions are fully determined, EIAs assess specific projects (for example, mine developments) and are conducted during planning or design stage.

Applying Strategic Environmental Assessments (SEAs) in the mining sector helps countries align mineral development with climate-mitigation and broader sustainability objectives. At the national level, SEAs support coordinated planning between mining and infrastructure needs, ensure alignment with climate and development policies, and assess institutional capacity to manage environmental and social risks. They strengthen regulatory frameworks on sustainability, improve governance and revenue management, encourage skills development and technology investments that reduce environmental footprints, and promote long-term planning for mine closure and rehabilitation. At the regional level, SEAs help assess mining's impacts on other economic sectors, identify priorities for conservation and low-carbon development, and enable cross-sectoral coordination across infrastructure, utilities, land-use planning and biodiversity. They also provide a structured approach to assessing and managing impacts on communities.

Kazakhstan has a legal framework for Strategic Environmental Assessment (SEA), but its effectiveness is weakened by implementation challenges. The Environmental Code mandates SEAs for key economic sectors, including mining, and territorial development plans and defines the process, including screening, scoping, reporting, quality review, monitoring, and stakeholder participation (Government of Kazakhstan, 2021[35]). However, implementation remains limited, and constrained by weak sectoral guidance, regulatory complexity, and low public participation (OECD, Forthcoming[36]).

The Environmental Code requires business activities with environmental impacts to undergo a comprehensive Environmental Impact Assessment (EIA), overseen by the Ministry of Ecology, Geology, and Natural Resources. If a preliminary screening determines that an Environmental Impact Assessment (EIA) is necessary, the latter should be conducted for open-pit mining for hard minerals exceeding 25 hectares, the extraction and processing of common minerals for over 10 000 tons per year, and the underground mining of hard minerals. The EIA process mandates a 30-day public consultation period, with documentation published on the Unified Environmental Portal (Ecogosfond.kz, 2026[37]). Interviews, however, indicate that the practical application of this requirement has been mixed (OECD, 2025[38]). Assessments of EIA implementation in Kazakhstan indicate deficiencies in their effectiveness. Furthermore, institutional capabilities are lacking at sub-national level (OECD, Forthcoming[36]).

Per the Law of the Kyrgyz Republic "On Environmental Protection", any planned economic activity which may have an impact on the environment must undergo a State Ecological Expertise. Without a positive conclusion, the project will be prohibited. The law also mandates Maximum Permissible Concentrations of harmful substances in water. Waste water discharge into water bodies of general use and underground water horizons is prohibited. The Law of the Kyrgyz Republic "On Environmental Expertise" mandates EIAs for all types and stages of development.

The newly adopted Law of the Republic of Uzbekistan "On Ecological Expertise, Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA)" mandates EIAs as a pre-requisite for the Ecological Expertise which ensues. For new projects, the EIA documentation includes a Draft Statement of Environmental Impact, a Statement of Ecological Consequences and, if required, a Statement of Environmental Impact. The project initiator is required to conduct public hearings as part of the EIA to discuss the potential environmental impacts of the planned activity among the public. If motivated objections from participants are included in the final documents of the public hearings, the project's implementation may be deemed as inadmissible. The EIA is followed by an Ecological Expertise, which consists of two separate processes: the State Ecological Expertise for materials concerning the selection/allocation of land plots for construction, pre-project and project documentation, existing objects which have a negative impact on the environment and objects with a special legal regime, and the Public Ecological Expertise, which is an environmental review conducted NGOs, local communities and citizens; its conclusions bear an advisory and non-binding character for the government's decision to approve the project. For projects included in strategic planning documents designed by the government (for example, mining projects submitted by SOEs), these planning documents should be subject to a SEA. At the time of writing, the Almalyk MMC is conducting a SEA for its new smelter project which should serve as a basis for further SEAs in the mining sector.

All three governments could consider working on three main directions regarding their current ecological expertise frameworks:

- **Integrating social and economic considerations into the current SEA processes** to allow for a full sustainability appraisal (OECD, 2006[34]). As of today, the three government frameworks do not yet demand the integration of economic and social considerations into SEA documentation.
- **Integrating institutional capacity assessments into the current SEA processes** to be able to enhance the governance framework in environmental, social and economic risk management (OECD, 2006[34]). Current frameworks do not yet include such an assessment.
- **Include the possibility of independent review into the current SEA processes** to allow for a quality assurance system (OECD, 2006[34]); in Uzbekistan, the Public Environmental Expertise could be made legally binding for government actors.

Targeting the mining sector more specifically, Central Asian governments could consider the following actions:

- **Strengthening the regulatory and institutional national framework for SEA** (e.g. in the Low-Carbon implementation roadmap, other relevant policies and national/sectoral strategies including mining) and designate "champions" in ministries in charge of mining development.
- **Developing practical guidelines** for sectoral application of SEAs in the mining sector, drawing from international experience.
- **Ensuring resources** (e.g. financial and human) **are adequate** and provide **clear timelines** aligning with project preparation processes.
- **Promoting and raise awareness across mining stakeholders** at national and local levels.
- **Implementing capacity-building and training programmes** for national and sub-national implementers specifically in the mining sector.

Addressing water stress and pollution

Water stress and water use inefficiency

Central Asia is particularly vulnerable to water stress

Central Asia suffers from water scarcity due to the historic mismanagement of surface and groundwater resources and intensive agriculture activities. Water stress is being exacerbated by rising demand, climate change and reliance on transboundary flows. The region has witnessed the rapid drying of its major water bodies, most notably the Aral Sea, once the world's third-largest lake and the region's main saltwater body. During the Soviet period, large-scale irrigated agriculture expanded across the arid plains of Kazakhstan, Uzbekistan and Turkmenistan, diverting water from the Aral Sea's two main inflows, the Amu Darya and the Syr Darya, primarily for cotton and rice cultivation. Over time, between the 1960s and the 2010s, the sea's surface area declined by nearly 90%. In Uzbekistan, the production of cotton, known as "white gold", drove a dramatic expansion of irrigated land, while in Kazakhstan, the country's main rice-producing region of Kyzylorda relied heavily on Syr Darya water as part of the Aral Sea basin (World Bank, 2004[39]) (France 24, 2025[40]) (NPR, 2024[41]) (IIETA, 2023[42]). As a result, by the late 1980s most of the southern (Uzbek) Aral Sea had dried up, leaving only the smaller northern Kazakh section, which later became the focus of restoration efforts. Water stress is now affecting the Caspian Sea, especially its northern part boarded by Kazakhstan's Atyrau and Mangystau regions, and is becoming a major cause for concern, as the sea is projected to lose up to a third of its surface area by the end of the century. At the same time, nearly 10 million people in Central Asia (13.5% of the population) still lack

access to clean drinking water, as an estimated 80% of the region's water infrastructure is outdated and causes water losses of up to 55% (Vinokurov, 2024[43]).

Kazakhstan is dependent on a declining flow from transboundary water bodies, while its water consumption is expected to increase

Kazakhstan depends significantly on water that originates beyond its borders, with transboundary sources providing about 44% of its total surface water inflow (FAO, 2022[44]). Over time, Kazakhstan has experienced a 27% decline in surface water flows due to the combined effects of climate change and rising water demand both domestically and in upstream countries (World Bank, 2024[45]). At the same time, national water consumption is expected to grow by 56% by 2040 (PrimeMinister.kz, 2020[46]). At the sectoral level, agriculture is by far the largest water consumer, accounting for approximately 60% of total withdrawals, primarily for irrigation purposes. Industry follows with about 23.5%, most of which goes to power generation and, to a lesser extent, extraction and refining. Household consumption is relatively minor, at about 4% (The Astana Times, 2025[47]). Water productivity in agriculture remains low due to water-intensive, low-value crops and ageing irrigation systems that suffer substantial losses. Water-use efficiency in industry, including mining, is also constrained by deteriorating infrastructure. A shortage of qualified staff and limited research in the water-use sectors add to these constraints, which, together with broader economic and regulatory factors highlighted in the copper mine case below, contribute to rising freshwater dependence in the mining sector (see Box 3.2) (World Bank, 2024[45]) (Radelyuk, I.; Klemes, J.J.; Jia, X.; Yelubay, M, 2023[48]).

Box 3.2. Mine water use in Kazakhstan: the case of a copper mine (MineX)

A study on a newly developed copper mine in Kazakhstan (MineX) analysed the water-use patterns of the country's expanding mining sector over seven years. By prioritising modern technology, efficiency, and closed-loop water management, the mine was able to reuse 84% of its operational water and discharge none to the environment. However, it still recorded 10% annual growth in freshwater withdrawals and 66% of total water consumption became entrained in the Tailings Storage Facility (TSF), contributing to a relatively high water intensity (0.69 m³ per ton of ore). MineX on its own accounted for an estimated 1.5% of extractive-industry water withdrawals and, given the 50% growth in mining companies over the past decade, the cumulative effect on the transboundary basin, which was already experiencing medium-high water stress, is considerable.

Water use inefficiency in Kazakhstan's mining sector stems from a combination of weak water governance and operational characteristics that create structurally high freshwater dependence. Industrial water tariffs remain extremely low (USD 0.04-0.10/m³, compared with a global average of USD 2.5–3.0/m³), making it far cheaper for companies to withdraw freshwater than to invest in treatment or additional reuse. At MineX, outdated allocation norms further undermine efficiency, with water permits allowing MineX to withdraw up to 30% more water than needed. At the same time, discharge regulations are set on a case-by-case basis, creating regulatory uncertainty that discourages investment in treatment plants and limits incentives to return water to the basin. Operationally, MineX loses a substantial proportion of water to tailings, meaning that much of it cannot be recovered and recycling becomes increasingly limited as production grows. Together, low economic incentives, regulatory gaps and these structural water losses mean that even with efficient internal recycling, the mine as well as the whole sector remain heavily reliant on withdrawing cheap freshwater, reinforcing unsustainable patterns in an already water-stressed region.

Note: the mine is referred to as 'MineX' for confidentiality reasons, as the identity of the company cannot be disclosed.
Source: (Atakhanova, Z., Meirambayeva, M., & Baigaliyeva, M., 2024[49])

The Kyrgyz Republic holds abundant water resources, but it could improve water access and productivity

The Kyrgyz Republic, with its abundant water resources and exceptionally low dependency ratio (only 1% of its surface water originates from neighbouring countries), is less exposed to water stress and plays a significant role in maintaining water security across the region. Its current water withdrawals amount to 15.6% of total internal renewable resources, and the overall water stress level of around 50% places the country in the low-medium range. Yet the Kyrgyz Republic still needs to ensure a more even distribution of safe drinking water across the country, as access remains far lower in rural areas than in cities. Only 67% of the rural population has access to safe drinking water, compared with 92% in urban areas, and out of the country's 2 014 villages, only 796 currently have access to clean water (The Times of Central Asia, 2025[50]). Overall water productivity in the Kyrgyz Republic is very low (0.84 USD per cubic metre, compared to the regional average of ≈1-2 USD), driven largely by agriculture, which uses over 90% of national withdrawals yet generates limited economic value due to inefficient flood irrigation. Within this context, industrial water-use efficiency also remains modest. Although industry accounts for only about 4% of total withdrawals, its economic water productivity, around 5.5 USD per cubic metre, is somewhat better. This weak performance is linked to systemic inefficiencies: only 19% of wastewater is safely treated. Industrial discharges, especially from mining, energy production and untreated wastewater, are major contributors to the country's water quality decline. Taken together, these factors mean that the

industrial sector generates comparatively little economic value from the water it uses while imposing disproportionately high environmental costs (World Bank, 2024[51]).

Uzbekistan is experiencing water scarcity, while its water productivity remains low

Uzbekistan's water endowment is in the low-medium range and around 80% of its surface water originates outside its borders. This reliance on transboundary inflows makes the country highly vulnerable to water-intensive activities upstream, such as dam construction and hydropower operations in countries like Tajikistan (World Bank, 2024[52]). Access to safe drinking water remains uneven, with only 71% of the rural population covered compared with 89% in urban areas (UNECE, 2025[53]). Climate change is expected to further intensify scarcity, with projections of a 30-40% decline in water availability and a 25% rise in irrigation demand in upcoming years (World Bank, 2025[54]). Overall economic water productivity in Uzbekistan is very low; the agricultural sector withdraws over 90% of total water yet produces very little economic value per unit, with productivity of just 0.45 USD per cubic metre. The industrial sector, while withdrawing less water (about 3.6%), shows moderate productivity (12-19 USD per cubic metre), but its overall water-use efficiency is hindered by broader systemic constraints. For example, at the Almalyk Mining and Metallurgical Plant, large volumes of wastewater (around 1,750 cubic metre per day) receive only partial treatment because purification equipment is obsolete and the technology no longer meets operational needs. Thus, limited treatment capacity reduces the potential for recycling and ultimately increases the mining sector's demand for fresh water (World Bank, 2024[52]) (Egamberdiyev, 2025[55]). In 2025, AMMC launched a pilot project for wastewater purification with the Finnish EPSE OY (Agmk.uz, 2025[56]).

Water management policies

All three countries rely on an existing body of legislation that regulates subsoil water use for mining, including water abstraction and discharge (see Annex 3.C).

- **In Kazakhstan**, any water abstraction project must be approved by the government if the volume exceeds 1000 m_3 per day. For water discharge, the current legislation differentiates between category I and II objects (having a negative environmental impact) and category III objects (having a negative environmental impact but less damaging than category I and II objects): for category I and II objects, an environmental permit for discharge of purified sewage and industrial waters, while a declaration of environmental impact is necessary for category III objects. The discharge of incidentally extracted underground waters during subsoil use operations is classified under special water use, thus requiring a special permit as well. However, the inflow of underground water into mining excavations during mineral extraction does not require any special permit or license, while the discharge of quarry and mine waters is not linked to immediate purification requirements.
- **In the Kyrgyz Republic**, the utilisation of water resources requires a license, water concession or lease. Wastewater discharge is subject to permission from specially authorised government bodies and must be co-ordinated with sanitary supervision and fish stock protection authorities. Wastewater discharge is permitted only if it does not increase the concentration of polluting substances in the water body beyond established norms, and only if the water user purifies the wastewater to specified limits.
- **In Uzbekistan**, water abstraction for mining requires abstraction quotas based on technological water needs norms set by the Ministry of Mining Industry and Geology for underground waters. Abstraction involving water-lifting devices constitutes special water use and requires a special permit from the Ministry of Mining Industry and Geology for operations abstracting more than 5 m_3 per day. Water discharge is also considered as special water use and requires a permit. Discharge is only allowed if it does not lead to pollutant concentrations exceeding established norms and if

the water user purifies the wastewater to government-set limits. Compensation payments for pollution are based on the "polluter pays" principle.

However, existing national programmes, even when they set objectives for water use, rarely outline specific objectives for the mining sector. In Kazakhstan, industry-specific objectives are not translated in numbered targets and seem to be more directed towards the hydrocarbon industry rather than mineral mining. In the Kyrgyz Republic, mining-specific targets are not outlined in national strategies, whereas in Uzbekistan, most water management targets are directed towards irrigation, stemming from the dominant position of the agricultural sector in water use; industry-related goals in Uzbekistan's strategies include the determination of water abstraction limits based on water resource forecasts and the improvement of the quality of the state water cadastre. The Ministry of Mining Industry and Geology of Uzbekistan is planning to transform its institute of hydrogeology into the first internationally accredited laboratory in Central Asia for the analysis of water, air and soil pollution on mining sites. The Ministry acknowledges that no mining company is currently using 100% recycled water but plans to reach this target in the foreseeable future. It is also planning to digitalise the balance accounting of ground and subsoil water by equipping all wells with adequate meters.

As further steps, governments could consider integrating mining-specific water objectives into future strategic development and environmental plans, setting clear, measurable targets for water use, consumption limits and pollution monitoring and reduction. The design or revision of CRM and mining strategies could likewise incorporate a substantive environmental component with explicit goals and limits for water consumption and contamination. Revisions to water tariffs could also help strengthen incentives to use water more efficiently. To strengthen oversight, the Kyrgyz Republic could also introduce separate abstraction permits or quotas for mining operations. In addition, both Kazakhstan and the Kyrgyz Republic could reinforce the "polluter pays" principle by establishing clear compensation mechanisms for contamination.

Water pollution

Official data on water pollution, which would permit and assessment of the consequences of mining for water bodies, remains scarce. Out of the three national statistics agencies, only the Kazakh agency provides numbers on water pollution levels. The indicator used is the **Water Pollution Index (WPI)**, a composite indicator which typically includes pH, electrical conductivity, Total Dissolved Solids (TDS), major ions, heavy metals and trace elements, turbidity, Biological Oxygen Demand (BOD), Dissolved Oxygen (DO), Chemical Oxygen Demand (COD) and fecal coliform counts. The WPI assessment is organised in grades (or classes) derived from scores:

- 1st grade: very clean (<0.3).
- 2nd grade: clean (0.3-1.0).
- 3rd grade: moderately polluted (1.0-2.5).
- 4th grade: polluted (2.5-4.0).
- 5th grade: dirty (4.0-6.0).
- 6th grade: very dirty (6.0-10.0).
- 7th grade: extremely dirty (>10.0).

Kazakhstan's WPI data shows potentially high levels of pollution resulting from mining. The data are available for 2022, but the grades are given without the exact scores which they are derived from. Results are particularly alarming for the rivers Nura, Talas and Tobol, which are reported to be polluted beyond the 5th grade (dirty). The Nura flows through the city of Temirtau, home to the country's largest coal mine, and close to the coal industry hub of Karaganda, which may partly explain the high levels of water pollution. The Tobol flows through the city of Rudny, which is home to the country's largest iron ore

metallurgical combine, consisting of several open pits and owned by ERG, and the town of Lisakovsk, which is home to an iron ore mine also extracting bauxites and zinc ore. The Shortandy, one of Tobol's tributaries, flows through the town of Zhitikara, home to the country's largest asbestos combine consisting of several open pits as well. The pollution levels of the Talas can be explained by the discharge of municipal waste from the city of Taraz, but also by the upstream mining activity in the Talas region of the Kyrgyz Republic (KazStat, 2023[57]).

Official and publicly accessible Kyrgyz data does not provide statistics on water pollution from mining. The most recent data containing WPI grades dates to 2017 and touches only upon the affluents of the Syr Daria river in the south of the country, mostly in Manas, Osh and Naryn regions. The results show only moderate pollution levels in some rivers. However, the lack of more recent WPI data for these water bodies does not allow for decisive conclusions (Karymshakov and Tazhibaev, 2017[58]). Indeed, the Mailuu-Suu river, one of Syr Daria's affluents having received a WPI grade of 3 (moderately polluted) in 2017, has been proven to possess an abnormally high concentration of uranium, selenium and heavy metals in a 2025 study using other indicators (Egemberdieva, 2025[59]), highlighting the risk of radioactive pollution from uranium mining. There are no WPI data on water pollution in the Issyk-Kul Lake, located close to the country's largest gold mines, and the Chüy-Talas basin in the north of the Kyrgyz Republic. However, recent studies found traces of heavy metals such as arsenic, chromium, lead, copper and zinc in the Issyk-Kul basin, which presence may be due to mining activities followed by heavy rains that make these metals leak from waste dumps (Liu, 2020[60]). The same heavy metals were found in water bodies of the Chüy-Talas basin, some of them probably originating from mining as well (Ma, 2020[61]).

Official and publicly accessible data does not provide statistics on water pollution from mining in Uzbekistan. The latest WPI data dates to 2018 and touches only upon the most polluted water bodies, two of which are water collectors. The Zarafshan river in the city of Navoi, home to the country's largest gold mining and metallurgical complex (NMMC), was reported to be moderately polluted (UNECE, 2020[62]). However, the lack of further data does not allow for a thorough assessment of water pollution in the country as a whole. In recent years, several projects have been completed at NMMC facilities, including the reconstruction of pumping stations at the Amu Daria-Zarafshan water pipeline and the increased reuse of wastewater and groundwater, which may have had a positive effect on the water quality of the Zarafshan (Ngmk.uz, 2025[63]).

As further steps, and building on the integration of mining-related objectives into national policy frameworks, governments could strengthen oversight of water pollution by ensuring more systematic and accessible monitoring data across major water bodies. Regular public disclosure of water-quality indicators would further enhance transparency and support more effective pollution management.

Managing mining waste and tailings

The expansion of mining and resulting challenges related to mining waste

Central Asia is home to numerous waste and tailings sites, the management of which entails significant risks

Kazakhstan, the Kyrgyz Republic and Uzbekistan are home to many active and legacy tailings storage facilities, some of which contain hazardous waste. Kazakhstan's tailings facilities are predominantly located in the East Kazakhstan region, where most of the country's zinc and lead industry is concentrated, but also in Karaganda and Jambyl regions in the centre and the south of Kazakhstan. In 2022, the Ministry of Ecology and Natural Resources intervened to halt the construction of a tailings dump project in Akmola region which did not undergo public hearings or state expertise, highlighting a rise in

awareness within state bodies about mining-waste-related issues (Business and Human Rights Centre, 2022[64]). In the Kyrgyz Republic, the State Cadastre of Mining Industry and Waste counted 92 facilities with toxic and radioactive mining waste: most of these sites are located in the Manas, Osh and Batken regions, close to the border with Uzbekistan. Regular debates arise on the subject of mining waste and tailings management in the Kyrgyz Republic, most recently targeting the new waste storage facility planned by the Finnish company Metso at the Kumtor gold mine (The Times of Central Asia, 2024[65]). Uzbekistan is likewise home to several tailings sites, some of which also contain radioactive waste from uranium mining. Uranium-mining-related waste management is a common issue for all three countries, as Kazakhstan and Uzbekistan are leading uranium producers, and the Kyrgyz Republic recently lifted its 2019 ban on uranium mining and revived its uranium industry. The development of new CRM mining sites will create larger volumes of chemically and radiologically hazardous waste, thus aggravating the existing risks for the ground and surface water, a tendency which could be exacerbated by heavier rainfalls, landslides and mudslides, as well as by high seismic activity in the Kyrgyz Republic and Uzbekistan.

Governments are beginning to address the issue through legislation and policy planning

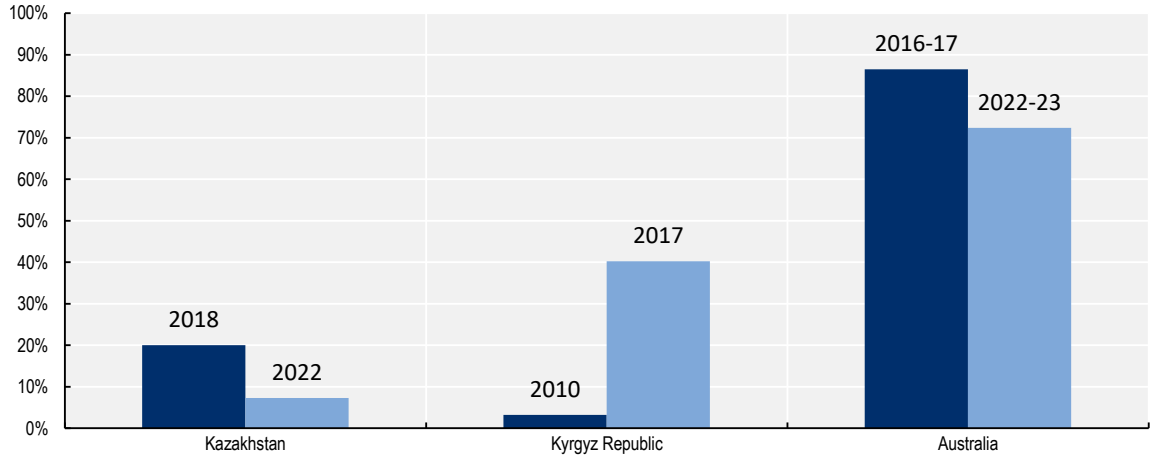
All three countries rely on an established body of subsoil and environmental legislation that, beyond general waste-management rules, also applies to mining waste and tailings, with a primary focus on safe handling, secure storage and, increasingly, resource recovery (see Annex 3.D).

Circular mining economy and waste management

The current levels of sustainable waste treatment are insufficient

Official data on hazardous waste management in Central Asia remains scarce. Kazakhstan is the only country to provide official and relatively recent statistics on the treatment of hazardous waste. The numbers show that the share of recycled, incinerated and landfilled hazardous waste in Kazakhstan has significantly declined, going from 20% in 2018 to 7.3% in 2022; however, this decline is probably due to a statistical discontinuity, as a stricter definition of hazardous waste has been introduced in the Kazakh Environmental Code adopted in 2021, which led to a reduction in reported hazardous waste volumes. Available UNECE data on the Kyrgyz Republic show a significant increase in recycling, incineration and landfilling of hazardous waste (from 3.22% in 2010 to 40.22% in 2017); however, the lack of more official government data on this subject does not allow for clear conclusions. Uzbekistan does not provide official data on hazardous waste treatment, and data from other sources was not found. Both Kazakhstan and the Kyrgyz Republic remain below the levels of Australia: even though the levels of recycling, incineration and landfilling of hazardous waste in Australia have decreased (from 86.51% in 2016-17 to 72.36% in 2022-23), they remain considerably above those of Kazakhstan and the Kyrgyz Republic (see Figure 3.3).

Figure 3.3. Share of recycled, incinerated and landfilled hazardous waste in total hazardous waste generated



Source: (KazStat, 2023[57]) (UNECE, 2024[13]) (Blue Environment, 2025[66])

Current government strategies aim for a more circular approach to waste management

In Kazakhstan, mining residues, including uranium-related waste, may be placed only in authorised subsoil sites, and the disposal of unprocessed or mixed hazardous and non-hazardous waste is not permitted. Operators must treat mineral-production waste as a potential secondary resource and restore land disturbed by extraction. National planning documents set several mining-waste-related targets, including increasing industrial-waste recycling to 50% by 2030 (up from 40% in 2022), introducing strengthened recycling and monitoring obligations for major industrial facilities by 2030 and reprocessing 11 mining-waste and ore deposits between 2024 and 2028.

In the Kyrgyz Republic, tailings facilities and mine dumps must meet strict requirements for the safe storage of hazardous and radioactive materials, regular monitoring and the recultivation of land affected by extraction, financed through dedicated reclamation funds. National strategies set several mining-waste-related targets, including bringing 16 uranium-legacy tailings and waste dumps into a safe condition by 2030 and carrying out a full audit and risk assessment of existing tailings and mine-dump sites for safer reprocessing and closure between 2023 and 2035. Additional measures include reducing accumulated industrial waste by expanding waste-processing capacity and limiting the burial of recyclable materials, implemented through five-year integrated plans under the Ecological Security Concept of 2023. Secondary processing of tailings is allowed only by government decision, ensuring tightly controlled reuse of hazardous mining residues. The new Strategic Development Programme for Critical Minerals plans to accelerate the recovery of minerals from mining waste.

In Uzbekistan, mining and industrial waste may not be disposed of if technologies for recovery or utilisation exist, and operators must incorporate waste-processing and resource-recovery measures into mine-closure plans. Any project involving the placement, processing or utilisation of waste is subject to ecological expertise prior to approval. Strategic planning documents complement these requirements with a target to recultivate 6075 hectares of land degraded by mineral extraction by 2030, reinforcing both the secondary use of mining waste and the rehabilitation of extraction-affected areas.

The lack of quantitative targets does not yet allow for the streamlining of circular mining economy objectives

Most strategies still propose only general objectives for waste management and rehabilitation, without outlining comprehensive, sector-specific quantitative targets for mining waste. This does not allow Central Asian countries to leverage their significant potential for reprocessing mining waste from legacy sites. While Kazakhstan provides a clear target for the increase of waste recycling, the government strategies of the Kyrgyz Republic include only limited mining-waste-related goals. Kazakhstan's legislation and government targets on waste and tailings appear to be more focused on promoting recycling, secondary processing and reuse of industrial and mining waste, while the Kyrgyz Republic imposes tighter regulations on secondary processing, focusing instead on waste monitoring and reduction. Uzbekistan's current legislation encourages processing, recycling and utilisation of mining waste and sets a land-recultivation target in its national strategy, but the lack of further mining-waste-specific objectives in government programmes suggests that it is not yet a priority of the country's mining policy, although some recent investment can be highlighted in the processing of tailings from tungsten mining sites.

Only Kazakhstan's legislation explicitly mentions the possibility for re-mining, which would allow restoring legacy mine sites to develop CRMs that were previously considered as waste (for example, antimony and arsenic which are often by-products of gold mining). However, Kazakhstan trails behind its neighbours on the recultivation of tailings and waste dumps: while recultivation is mandatory in the Kyrgyz Republic and Uzbekistan has set a quantitative recultivation target, Kazakhstan's national strategies do not yet include comparable commitments.

As further steps, governments could consider working in the five following directions:

- **Integrate quantitative targets** for the reduction of unrecycled mining waste and tailings in government strategies and programmes.
- **Develop national criteria according to which certain mining waste materials could be considered as by-products**, allowing for the reuse of such materials (OECD, 2025[67]).
- **Improve the enabling environment for secondary extraction** by providing clarity in subsoil code on preferential royalty rates and environmental liability concerns.
- **Encourage foreign investment in legacy mining sites** for the integration of new waste reuse technologies (see Box 3.3).
- **Launch Public-Private Partnership (PPP) projects at priority legacy mining sites** to demonstrate how mining waste can be safely reprocessed and converted into usable materials.

Box 3.3. Central Asia Metals PLC at the Kounrad copper mine in Kazakhstan

The Kounrad copper mine, located near the city of Balkhash in Kazakhstan, was operational from 1936 until 2005, when it closed and left behind significant waste dumps containing recoverable copper. In 2007, the UK-owned publicly traded company Central Asian Metals PLC acquired an interest in the site.

By 2012, it had constructed a solvent extraction – electrowinning (SX-EW) plant. The process produces copper cathode by using in-situ leaching to remove copper and other metals from the waste dump. It then uses a concentrating and electrowinning process to make copper cathode. Besides allowing for effective waste reuse, this process is considerably less cost-intensive than traditional mining because it involves no drilling, blasting, or ore transporting activities.

In 2016, the facility was further expanded, to continue extracting more copper.

Source: (Central Asia Metals, 2025[68])

Governments could also consider implementing country-specific measures:

- Kazakhstan could include objectives and quantitative targets on the recultivation of mining waste dumps and tailings storage facilities.
- The Kyrgyz Republic could ease the current restrictions on the secondary processing of tailings, which would allow for more re-mining opportunities for by-products of gold mining.
- Uzbekistan could introduce Green Public Procurement (GPP) incentives that give preference to offers using certified secondary materials recovered from tailings, complemented by targeted financial support for companies developing the technologies needed to supply them.

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Annex 3.A. Strategic plans relevant to GHG emissions

Annex Table 3.A.1. Strategic plans relevant to GHG emissions

Strategy, Year of Adoption, Source	Nature of the document, overarching objective	Relevant provisions, goals and targets
Kazakhstan		
NDC 3.0 (until 2035), 2025, (UNFCCC, 2023[22])	Kazakhstan's Nationally Determined Contribution to the global response to climate change under the Paris Agreements	• Reduce GHG emissions by 17% by 2035 compared to the level of 1990 emissions (unconditional goal) and bring the reduction to 25%, subject to obtaining international support for the decarbonisation of the economy (conditional goal) • Reduce the energy intensity of GDP from the 2021 level by 20% by 2035 • Reduce the national carbon budget for sectors covered by the Emissions Trading System (ETS) by 3.41% annually through 2030
Kazakhstan Strategy 2050 (2013 - 2050), 2012 (Government of the Republic of Kazakhstan, 2012[69])	Main long-term development strategy of Kazakhstan	• The transition to a low-carbon economy and power generation from alternative and renewable sources mentioned as strategic goals
Kazakhstan's National Development Plan until 2029, 2024 (Adilet, 2024[23])	Main mid-term development strategy of Kazakhstan	• Commitment to achieving carbon neutrality by 2060 • The annual GHG emission reduction rate is planned to increase from 2.7% to 5% for the 2026-2030 carbon budgeting period • The maximum volume of GHG emissions relative to 1990 levels is set at 86.0% by 2029 • Energy consumption and energy intensity are planned to be reduced by at least 15% by 2029
Action Plan for implementing the Concept for the Transition of the Republic of Kazakhstan to a "Green Economy" for 2024-2030, 2024 (Adilet, 2024[70])	Main mid-term plan for Kazakhstan's green transition	• 15% energy intensity reduction target by 2030 • Specific targets for the 50 largest polluting enterprises in the country, aiming at a 10% reduction in solid polluting substance emissions by 2030 compared to 2022 levels (see below)
Strategy to Achieve Carbon Neutrality by 2060 (2023-2060), 2023, (UNFCCC, 2023[71])	Main long-term strategy on carbon emissions reduction of Kazakhstan	• Unconditional reduction of GHG emissions by 15% by December 2030 relative to 1990 levels • Conditional reduction of GHG emissions by 25% by December 2030 relative to 1990 levels, subject to additional international investments and financing from the Green Climate Fund • Carbon neutrality by 2060

Comprehensive Plan for the Development of the Rare and Rare Earth Metals Industry for 2024-2028, 2023 (Adilet, 2023[26])	Main CRM development strategy of Kazakhstan	• No specific climate targets
Kyrgyz Republic		
NDC 3.0, 2025 (UNFCCC, 2025[25])	The Kyrgyz Republic's Nationally Determined Contribution to the global response to climate change under the Paris Agreements	• Unconditional reduction of GHG emissions by 18% by 2030; conditional reduction by 30% with additional international support • Further unconditional reduction of GHG emissions by 16% by 2035; conditional reduction by 39% with additional international support • Specific goals for the industrial sector (see below)
The Kyrgyz Republic National Development Programme up to 2030, 2025 (Government of the Kyrgyz Republic, 2025[72])	Main mid-term development programme of the Kyrgyz Republic	• NDC 2.0 objectives for GHG emissions reductions, have not been updated after the publication of NDC 3.0
Concept of Ecological Security of the Kyrgyz Republic, 2023 (Government of the Kyrgyz Republic, 2023[23])	Main mid-term environmental programme of the Kyrgyz Republic	• No specific goals/targets for GHG emissions reduction in the mining sector
Draft Concept for the Development of the Geological and Mining Industry of the Kyrgyz Republic for 2023-2035, 2022 (Government of the Kyrgyz Republic, 2022[73])	Main draft strategy for the mining sector in the Kyrgyz Republic	• No specific goals/targets for GHG emissions reduction in the mining sector
The Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030, 2025	Main CRM strategy of the Kyrgyz Republic	• Alignment with EITI and ICMM environmental standards • Utilisation of green financing • Target to rank among the top 60-120 countries in the Environmental Performance Index by 2040 • No specific GHG-related provisions
Uzbekistan		
NDC 3.0, 2025 (UNFCCC, 2025[24])	Uzbekistan's Nationally Determined Contribution to the global response to climate change under the Paris Agreements	• Unconditional reduction of GHG emissions by 50% by 2035 • Target to achieve net-zero emissions by 2055
Uzbekistan – 2030 Strategy (Lex.uz, 2023[74])	Main mid-term development strategy of Uzbekistan	• Reduction of GHG emissions relative to the GDP unit by 30% compared to 2010 levels • Creation of a monitoring system covering all GHG, named the MRV (Monitoring, Reporting and Verification) system
Strategy for the Transition to a "Green" Economy 2019-2030 (Lex.uz, 2019[75])	Main mid-term environmental strategy of Uzbekistan	• No specific goals for GHG emissions in mining
New Uzbekistan Development Strategy for 2022-2026, 2022 (Lex.uz, 2022[76])	Current 5-year development plan of Uzbekistan	• Target of "harmful gases" emissions reduction by 20% by 2026 • Planned increase of the country's energy efficiency by 20% by 2026

Source: Sources are indicated next to the names of the laws/strategies.

Annex 3.B. Legislation relevant to GHG emissions

Annex Table 3.B.1. Legislation relevant to GHG emissions

Law, Year of Adoption (Year of Last Amendment), Source	Nature of the document, overarching objective	Relevant provisions
Environmental Code of the Republic of Kazakhstan, 2021 (2025), (Adilet, 2021[31])	Main environmental law of Kazakhstan	• Target of reducing GHG emissions by 15% by 2030 compared to 1990 levels • Enterprises which are subject to the emissions trading system (ETS) quotas are required to develop a monitoring plan for their GHG emissions, and the results of GHG emissions inventories must go through a verification process
Law of the Kyrgyz Republic "On State Regulation and Policy in the Field of Emission and Absorption of Greenhouse Gases", 2007 (Government of the Kyrgyz Republic, 2022[33])	Main law regulating GHG emissions in the Kyrgyz Republic	• Integration with national, foreign and international systems for accounting and monitoring GHG emissions • Accessibility of information on actual and projected GHG emissions • State system for monitoring the content of GHG in the atmosphere and compiling a database based on monitoring results
Law of the Republic of Uzbekistan "On Limiting Greenhouse Gas Emissions", 2025, not yet in force (Lex.uz, 2025[32])	Main law regulating GHG emissions in Uzbekistan	• Framework for the monitoring, reporting and verification (MRV) measures to limit GHG emissions • Enterprises making GHG emissions may generate carbon units for implementing green projects • Owners of carbon units are allowed to set prices for their released units based on market mechanisms and withdraw carbon units from circulation • This framework is complemented by State-established target indicators for GHG emissions reduction

Source: Sources are indicated next to the names of the laws/strategies.

Annex 3.C. Legislation and strategic plans relevant to water resources

Annex Table 3.C.1. Legislation and strategic plans relevant to water resources

Law/Strategy, Year of Adoption (Year of Last Amendment), Source	Nature of the document, overarching objective	Relevant provisions, goals and targets
Kazakhstan		
Code of the Republic of Kazakhstan "On Subsoil and Subsoil Use", 2017 (2025), (Adilet, 2017[77])	Main law regulating subsoil use in Kazakhstan	• Prohibition to conduct any non-hydrocarbon subsoil use operation on water fund lands and inside the zones of underground water meant for potable water supply
Environmental Code of the Republic of Kazakhstan, 2021 (2025), (Adilet, 2021[31])	Main environmental law of Kazakhstan	• Mining operations must assess and prevent the potential for water pollution and ensure minimal cyanide concentration in liquid waste
Water Code of the Republic of Kazakhstan, 2025 (Adilet, 2025[78])	Main law regulating the use of water resources in Kazakhstan	• Mandates the use of technical water for industrial needs instead of drinking-quality water • Digital reforms, including satellite monitoring, deficit-zone mapping and a new National Information System • Permit for the abstraction and use of underground waters • Environmental permit for discharge of purified sewage and industrial waters for category I and II objects • Declaration of environmental impact for category III objects • Special permit for the discharge of incidentally extracted underground waters
Kazakhstan's National Development Plan until 2029, 2024 (Adilet, 2024[23])	Main mid-term development strategy of Kazakhstan	• Goal to reduce per capita water consumption by 1.5 times up to 2029 • Plan to introduce mechanisms to encourage the use of alternative water sources • Introduction of water-saving technologies and circular water supply systems in industry • Regional co-operation for the management of transboundary water bodies
Action Plan for implementing the Concept for the Transition of the Republic of Kazakhstan to a "Green Economy" for 2024-2030, 2024 (Adilet, 2024[70])	Main mid-term plan for Kazakhstan's green transition	• Plan to increase the share of reservoirs with good surface water quality to 35% and to increase the treatment of wastewater from human activity to 45% by 2030
Concept for the Development of the Water Resources Management System for 2024-2030, 2024 (Adilet, 2024[79])	Main mid-term plan for water management in Kazakhstan	• Goal to increase water reuse from 17% as planned for 2026 to 28% by 2030 • Assessment and monitoring of groundwater resources and reserves

		• Increase of wastewater use for secondary purposes in industry • Creation of an annual inventory of water body pollution sources • Planned cleanup of several rivers which suffer from industrial contamination
Kyrgyz Republic		
Law of the Kyrgyz Republic "On Subsoil", 2012 (2014), (Government of the Kyrgyz Republic, 2016[20])	Main law regulating subsoil use in the Kyrgyz Republic	• Mandatory licensing for the extraction and use of underground waters • Drilling wells deeper than 30 meters allowed with a drilling project including a safety and subsoil protection expert review
Law of the Kyrgyz Republic "On Water", 1994 (2019), (Government of the Kyrgyz Republic, 2022[33])	Main law regulating the use of water resources in the Kyrgyz Republic	• Reduction or prohibition of water consumption for industrial purposes if an industrial activity exceeds its water limit • Permit for wastewater discharge in co-ordination with sanitary supervision and fish stock protection authorities • Wastewater discharge is permitted only if it does not increase the concentration of polluting substances in the water body beyond established norms, and only if the water user purifies the wastewater to specified limits
The Kyrgyz Republic National Development Programme up to 2030, 2025 (Government of the Kyrgyz Republic, 2025[72])	Main mid-term development programme of the Kyrgyz Republic	• Target to reduce the level of water loss by 15% by 2030 • Plans to develop digital systems for accounting and monitoring water consumption
Concept of Ecological Security of the Kyrgyz Republic, 2023 (Government of the Kyrgyz Republic, 2023[23])	Main mid-term environmental programme of the Kyrgyz Republic	• Development of standards for maximum permissible harmful impacts on water • Implementation of water protection zones
Uzbekistan		
Law of the Republic of Uzbekistan "On Subsoil", 2025 (Lex.uz, 2024[80])	Main law regulating subsoil use in Uzbekistan	• Water use for extraction purposes allowed only if there is sufficient runoff for downstream users • Mandatory hydrogeological research during geological studies • Necessary approval from the Ministry of Water Resources if the activity is planned within water protection zones of surface water objects
Water Code of the Republic of Uzbekistan, 2025 (Lex.uz, 2025[81])	Main law regulating the use of water resources in Uzbekistan	• Abstraction quotas for mining • Special permit for the abstraction involving water-lifting devices • Permit for water discharge • Discharge should not lead to pollutant concentrations exceeding established norms and wastewater must be purified to established limits • "Polluter pays" principle for compensation payments
Uzbekistan – 2030 Strategy (Lex.uz, 2023[74])	Main mid-term	• Target to increase water use

	development strategy of Uzbekistan	efficiency by 25% by 2030 • Regional co-operation for the management of transboundary water bodies • Construction or reconstruction of drainage and treatment facilities • Mandatory publishing of data on the level and quality of industrial wastewater
New Uzbekistan Development Strategy for 2022-2026, 2022 (Lex.uz, 2022[76])	Current 5-year development plan of Uzbekistan	• Goal to save 7 million m_3 of water through efficient use
Concept for the Development of Water Management of the Republic of Uzbekistan for 2020-2030, 2020 (Lex.uz, 2020[82])	Main mid-term water management strategy of Uzbekistan	• Expand the total area of land covered by water-saving technologies to 2 million hectares • Automate water management processes at 100 large water management facilities • Determine abstraction limits through water resource forecasts

Source: Sources are indicated next to the names of the laws/strategies.

Annex 3.D. Legislation and strategic plans relevant to waste and tailings

Annex Table 3.D.1. Legislation and strategic plans relevant to waste and tailings

Law/Strategy, Year of Adoption (Year of Last Amendment), source	Nature of the document, overarching objective	Relevant provisions, goals and targets
Kazakhstan		
Code of the Republic of Kazakhstan "On Subsoil and Subsoil Use", 2017 (2025) (Adilet, 2017[77])	Main law regulating subsoil use in Kazakhstan	• Requires the placement of uranium-mining waste only within licensed subsoil plots. • Enables re-mining of old waste dumps and tailings through contract extensions and free transfer of state-owned legacy mining waste for utilisation.
Environmental Code of the Republic of Kazakhstan, 2021 (Adilet, 2021[31])	Main environmental law of Kazakhstan	• Prohibits landfilling without prior processing and mixing hazardous with non-hazardous waste. • Requires environmental assessments, protective zones, and prohibits liquid radioactive waste burial. • Requires subsoil users to promote the use of wastes from mineral production as secondary resources and to conduct reclamation of lands disturbed by mining operations.
Safety requirements for coal and industrial processes of their mining, processing, storage and transportation, 2010 (2012) (Adilet, 2012[83])	Technical Regulation	• Requires coal mining and processing enterprises to ensure safe waste management and mandates environmental measures at tailings storage facilities to prevent dusting and contamination.
Kazakhstan's National Development Plan until 2029, 2024 (Adilet, 2024[23])	Main mid-term development strategy of Kazakhstan	• Promotes circular economy by improving resource efficiency and waste processing, and increases business responsibility for proper waste management.
Action Plan for implementing the Concept for the Transition of the Republic of Kazakhstan to a "Green Economy" for 2024-2030, 2024 (Adilet, 2024[79])	Main mid-term plan for Kazakhstan's green transition	• Target to increase industrial waste recycling to 50% by 2030 (from 40% in 2022). • Requirement of full compliance for Category I enterprises with recycling and monitoring by 2030, mandatory liquidation of illegal dumps by 2030. • Launch of a national Waste Cadastre in 2025.
Comprehensive Plan for the Development of the Rare and Rare Earth Metals Industry for 2024-2028, 2023 (Adilet, 2023[84])	Main CRM development strategy of Kazakhstan	• Nationwide inventory of mining waste sites by 2025. • Target to identify and involve 11 mining-waste and ore deposits into development through reprocessing and recovery of valuable materials.

Rules for development of waste management program, 2021 (Adilet, 2021[85])	Ministerial Order establishing rules for developing enterprise waste-management programs	• Waste-management programs for large industrial enterprises that include measures to reduce waste generation, increase reuse and recycling, justify waste-disposal and storage limits, and plan for site reclamation.
Kyrgyz Republic		
Law of the Kyrgyz Republic "On Subsoil", 2012 (2014), (Government of the Kyrgyz Republic, 2016[20])	Main law regulating subsoil use in the Kyrgyz Republic	• Requires safe storage/burial of harmful and radioactive substances and mandatory reclamation with a dedicated fund.
Law of the Kyrgyz Republic "On Production and Consumption Waste", 2023 (Government of the Kyrgyz Republic, 2023[86])	Main law regulating waste production and consumption in the Kyrgyz Republic	• Sets mandatory measures to reduce waste generation and prohibits landfilling production waste that contains useful components suitable for processing.
Law of the Kyrgyz Republic "On Tailings and Mine Dumps", 2001 (2009), (The government of the Kyrgyz Republic, 2022[87])	Main law regulating the management of mining waste and tailings in the Kyrgyz Republic	• Establishes strict state control, inventory, monitoring and mandatory recultivation of tailings facilities and mine dumps, with bans on importing radioactive or toxic waste and prohibitions on economic activity in designated storage zones. • Permits secondary processing of tailings and mine dumps only by government decision, ensuring tightly regulated reuse of hazardous mining waste.
The Kyrgyz Republic National Development Programme up to 2030, 2025 (Government of the Kyrgyz Republic, 2025[72])	Main mid-term development programme of the Kyrgyz Republic	• Target to bring 16 tailings dumps and mining dumps of former uranium legacy into a safe state.
Draft Concept for the Development of the Geological and Mining Industry of the Kyrgyz Republic for 2023-2035, 2022 (Government of the Kyrgyz Republic, 2022[73])	Main draft strategy for the mining sector in the Kyrgyz Republic	• Full audit of tailings and waste dumps, with plans to assess their risks and explore options for safe reprocessing and reclamation. • Goal of improved mine-closure through land-rehabilitation rules and regular environmental monitoring.
Concept of Ecological Security of the Kyrgyz Republic, 2023 (Government of the Kyrgyz Republic, 2023[88])	Main mid-term environmental programme of the Kyrgyz Republic	• Goal to reduce accumulated industrial waste and rehabilitate hazardous legacy sites, including radioactive and toxic tailings and dumps, with continuous environmental and radiation monitoring. • Goal to expand waste processing and secondary use through bans on burying recyclable waste and building processing facilities.
The Kyrgyz Republic Strategic Development Programme for Critical Minerals through 2030, 2025	Main CRM strategy of the Kyrgyz Republic	• Goal to accelerate the recovery of minerals from mining waste
Uzbekistan		
Law of the Republic of Uzbekistan "On Subsoil", 2025 (Lex.uz, 2024[80])	Main law regulating subsoil use in Uzbekistan	• Requires liquidation plans to include concrete measures for the processing and utilisation of mining waste, making waste recovery a mandatory part of mine-closure.

Law of the Republic of Uzbekistan on Waste, 2002 (Lez.uz, 2002[89])	Main law for handling residual materials in Uzbekistan	• Prohibits the burial of industrial and mining waste when utilisation technologies exist, requiring enterprises to store, recover, and process waste with resource value rather than dispose of it.
Law of the Republic of Uzbekistan "On Ecological Expertise, Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA), 2025 (lex.uz, 2025[90])	Main law on ecological expertise in Uzbekistan	• Requires all projects involving waste placement, processing or utilisation to undergo mandatory ecological expertise.
Uzbekistan – 2030 Strategy (Lex.uz, 2023[74])	Main mid-term development strategy of Uzbekistan	• Target to recultivate 6,075 ha of land degraded by mineral extraction.

Source: Sources are indicated next to the names of the laws/strategies.

4 Base Erosion and Profit Shifting tax risks in the CRM sector

The critical raw materials (CRM) sector offers significant revenue potential for Central Asian governments; however, the realisation of these benefits is threatened by Base Erosion and Profit Shifting (BEPS) practices.

The OECD Secretariat has reviewed the tax systems of Kazakhstan, the Kyrgyz Republic and Uzbekistan as they apply to the CRM sector to identify legislative gaps leading to BEPS risks. This high-level review indicates that principal risks in the CRM sector relate to the under-pricing of mineral sales, the use of related-party financing to shift profits, and the transfer of mining licences without appropriate compensation.

This chapter provides recommendations on how these three countries' tax frameworks can be aligned with international standards to mitigate these BEPS risks and ensure that appropriate government revenues are realised from the development of their CRM sectors.

Base Erosion and Profit Shifting risks in the CRM sector

The critical raw materials (CRM) sector presents significant revenue opportunities for governments, but these potential gains are at risk of being undermined by Base Erosion and Profit Shifting (BEPS) practices. BEPS refers to tax planning strategies that Multinational Enterprises (MNEs) use to exploit loopholes in tax rules to artificially shift profits to low- or no-tax locations in order to avoid or minimise paying tax (OECD, 2025[1]).

Globally, such practices are estimated to cost countries between USD 100 billion and USD 240 billion in lost revenue each year (OECD, 2025[1])**.** While no comprehensive estimate exists for Central Asia, evidence from other resource-rich regions highlights the scale of the risk. In Sub-Saharan Africa, BEPS practices in the mining sector are estimated to cost governments between USD 470 million and USD 730million annually (IMF, 2021[2]). BEPS practices disproportionately affect resource-rich emerging economies due to their heavy reliance on corporate income tax, particularly from MNEs, as well as relatively under-developed legal frameworks and administrative capacities (OECD, 2025[1]).

As part of this project, the OECD has reviewed key features of the tax legislation of Kazakhstan, the Kyrgyz Republic and Uzbekistan as they apply to the CRM sector to identify legislative gaps leading to BEPS risks. While further work would be needed to more precisely map and quantify the full scale of BEPS risks in the CRM sector of each country, three key risks clearly stand out. These relate to legislative gaps that allow for abusive BEPS practices involving:

1. the under-pricing of mineral sales;
2. the use of abusive financing structures for CRM projects; and
3. the structuring of mining licence sales in a manner that avoids taxation, most often via offshore indirect transfers.

The chapter then identifies ways in which national tax frameworks could be strengthened to address these challenges, and how alignment with international tax policy standards and best practices may help to mitigate the identified BEPS risks. It draws on more than a decade of work in the context of the OECD/G20 BEPS Project, which equips governments with rules and instruments to address tax avoidance, ensuring that profits are taxed where economic activities generating them take place and where value is created.

Finally, it briefly discusses additional risks and challenges arising from the increasing use of tax incentives in the CRM sector, as well as common shortcomings in their policy design and administration. A comprehensive assessment of these emerging trends is, however, beyond the scope of this chapter and represents an area for further analysis.

Under-pricing of CRMs

Under-pricing is a common risk observed globally in many resource-rich countries endowed with critical minerals, including Australia, Canada and Mongolia[1]. Rather than selling minerals directly to independent buyers at market prices, companies may sell them to related parties located in low- or no-tax jurisdictions at below market prices, which then on-sell the minerals at market value. This practice shifts a portion of the profit out of the producing country, thereby reducing the tax base in the jurisdiction where the mineral is extracted or processed. The under-pricing of minerals can affect a wide range of critical minerals. In particular, some taxpayers may seek to exploit information asymmetries, especially for certain critical minerals that do not yet have transparent market pricing structures (such as quoted or index prices). This lack of pricing benchmarks can make it difficult to determine an appropriate arm's length price for the mineral.

Specific challenges have been identified in the region where taxpayers interpose intermediaries that are not formally members of a MNE group, yet act in concert with the taxpayer to achieve tax

avoidance outcomes. Such entities may operate as intermediaries or agents, or be used in split-payment arrangements whereby the mineral is initially sold at a below-market price and the difference is paid to entities located in low- or no-tax jurisdictions. These structures are designed to circumvent the application of transfer pricing rules and are particularly difficult to detect due to their opacity and current limitations in the effective exchange of information in Central Asia.

By under-pricing mineral sales, companies reduce taxable income in the producing country, resulting in lower corporate income tax liabilities and, where special mining royalties are levied on sales value, lower royalty payments. This practice may also reduce liabilities under profit-based mining rent taxes. In addition, under-pricing can reduce dividend withholding tax, as lower profits earned locally result in smaller dividend distributions subject to withholding tax.

The hypothetical example in Table 1 illustrates the potential revenue loss for a country (assuming a corporate tax rate of 25%, a royalty rate of 5%, and a dividend withholding tax rate of 5%[2]) over one year and 50 shipments of a critical mineral. It also demonstrates the impact of the undeclared value of other valuable minerals, such as gold, commonly present in exports of mineral concentrates rather than in exports of final products (Table 4.1).

Table 4.1. Revenue impacts from the under-pricing critical minerals

Critical mineral shipment	Arm's length price (USDm)	Mineral priced at 10% below the arm's length price (USDm)	Mineral priced at 10% below the arm's length price, and where no gold is declared (USDm)
Gross value of cargo (20,000 megatonnes) [A]	39.50	35.55	32.70
Production costs [B]	22.50	22.50	22.50
5% royalty payable [5% x A = C]	1.98	1.78	1.64
Corporate income tax base [A – B -C = D]	15.03	11.27	8.57
25% Company tax payable [25% x D = E]	3.76	2.82	2.14
Total tax revenue per shipment from CIT and royalty [C + E]	5.73	4.60	3.78
Revenue loss per shipment		1.14	1.96
Revenue loss – 50 shipments per year		56.78	97.75
5% Withholding tax (WHT) on dividend (5% x [D-E])	0.56	0.42	0.32
WHT loss - one shipment per year		0.14	0.24
WHT loss - 50 shipments per year		7.04	12.11
Total Revenue Loss – 50 shipments per year		**63.82**	**109.86**

Source: OECD analysis.

Mispricing of other transactions along the mineral value chain

In addition to under-pricing mineral exports, companies may misprice other transactions along the mineral value chain, such as freight, offshore services, and procurement. Such practices often occur in conjunction with under-pricing of exports and have a similar fiscal impact, as they reduce the corporate income tax base, the dividend withholding tax base, and potentially special mining rent taxes where these are profit-based.

The international best practice to address under-pricing of critical minerals is to have robust transfer-pricing legislation and a well-trained tax administration that can apply this legislation to identify and audit under-pricing risks. The OECD Transfer Pricing Guidelines (OECD, 2022[3]) provide internationally agreed principles on which transfer pricing legislation relies. The OECD TPGs require all transactions between related parties to be priced at the "arm's length" price, which is the price that would be agreed between unrelated parties in comparable circumstances. This is to ensure that related parties cannot manipulate the prices of transactions to secure favourable tax outcomes.

In relation to CRMs, this means the company selling the minerals to a related party should be paid an arm's length price which should then be used for the purposes of calculating mining royalties and corporate tax liabilities in the jurisdiction where that entity operates. Issues arise regarding how this concept applies to long-term related-party sales and purchase agreements, especially with respect to whether the pricing should be fixed or index-linked. Ultimately, the considerations are the same, meaning the pricing of these long-term contracts should reflect what independent parties in comparable economic circumstances would agree.[3] This requires comparison not only of the price or the pricing mechanism as agreed in the specific contract, but also how that mechanism and the broader contractual terms are consistent with practices between independent parties in comparable circumstances.

Determining the arm's length price for critical minerals is complex, given that each mineral has its unique supply chains and demand dynamics. The OECD TPGs provide guidance for the pricing of commodity transactions, especially at paragraphs 2.18 to 2.22. It primarily recommends the use of the "Comparable Uncontrolled Price" (CUP) method to determine the arm's length price for commodity transactions. Under the CUP method, the arm's length price for the mineral is essentially the relevant quoted price[4], noting that adjustments may need to be made to reflect certain terms of the transaction, for example the specific characteristics of the mineral being traded and the timing and terms of delivery, amongst others. Where it is possible to identify comparable uncontrolled transactions, the CUP method is the most direct and reliable way to apply the arm's length principle. Every effort should be made to adjust the data so that it may be reliably used. Any alternative method contemplated instead of the CUP method in case of mineral commodities should aim to replicate market forces such as supply and demand and to appropriately account for the value of the transacted commodity

Challenges arise where the mineral in question is not traded on established and transparent markets, and thus there is no reliable quoted price or comparable arm's length transactions to use. This may also be the case where the mineral is being sold in intermediate form, as there is often no quoted price for those stages of the process. These circumstances should not prevent the application of the CUP method to the extent that appropriate adjustments can be made to obtain the arm's length price.[5] If adjustments are not feasible, the OECD TPGs provides for the use of other methods. Guidance on this is also available in the toolkit on A*ddressing difficulties in accessing comparable data for transfer pricing analyses* published by the Platform for Collaboration on Tax (PCT), which has a supplementary report on *Addressing the Information Gaps on Prices of Minerals Sold in an Intermediate Form* (The Platform for Collaboration on Tax, 2017[4]).

To provide practical guidance with specific industry insights, the OECD, in collaboration with the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF), has published a series of toolkits to aid tax administrations in pricing of minerals for transfer pricing –

including an overarching framework, and specific toolkits for lithium, bauxite and one in development for copper (OECD; IISD, 2023[5]); (OECD, IISD, 2024[6]); (OECD, IISD, 2023[7]); (OECD, IISD, 2025[8]).

Abusive structuring and pricing of financing for mining operations

In this report, abusive financing refers to financing arrangements between related parties that are structured in a manner to achieve BEPS outcomes. Such arrangements typically seek to artificially inflate an entity's debt-related deduction (in the form of interest or equivalent payments), for example, by treating de facto equity funding as debt, injecting an excessive level of debt, or contractually establishing an excessive interest rate. Some arrangements may also rely on hybrid mismatch outcomes.

Financing needs in mining operations are generally very high, especially at the exploration and development stages, where there is a need for significant capital expenditure, but the mine or project is not yet generating income. Besides internally generated funds, companies finance their operations through debt or equity. Generally, companies can claim a tax deduction for interest paid on debt, but there is no equivalent ability to claim a tax deduction for equity-related payments. Where funds are available in the MNE group and it is a matter of how to legally structure the financing, for tax optimisation reasons, companies often choose debt financing to take advantage of the associated tax deduction on the accrued interest and other potential deductions, such as foreign exchange differences resulting from indebtedness.

Where such financing is provided by a related party, two main issues may arise. First, the financing provided by shareholder investors as equity for a specific project may be structured as an intercompany loan to achieve the tax deductions. Second, this related party loan may include a non-arm's length interest rate, or other terms and conditions to maximise tax deductions. The issue can be thus both the excessive rate of interest and quantum of debt, which results in excessive interest deductions in the debtor country, with profit being shifted (via the interest payment) to the country where the creditor is located. Further complex issues can arise when determining the appropriate terms and conditions such as the interest rate for a given related party financing arrangement. This includes considerations as to whether the determination of the interest rate should consider only the risk-profile of the debtor/borrower as a stand-alone entity, or whether its membership as part of the MNE group should be considered. Chapter X of the OECD TPGs provides guidance on this issue and recognises the relevance of being a member of the MNE group for the purpose of determining the credit rating of the debtor in a similar manner as would be done between independent parties in comparable circumstances.[6]

This particular risk can be especially pronounced in the exploration phase, where the high-risk nature of the project makes attracting third-party debt investment difficult. A significant number of exploration projects fail to discover commercially feasible deposits. Independent investors are generally willing to invest funds in such a risky venture only if they can also share the significant upside value potential resulting from the successful exploration activities. This is why exploration companies (including so-called junior companies) rely primarily on equity-based funding. However, in the related-party context and in multinational groups, investments in these early and high-risk phases are often structured as related-party debt funding at high interest rates to take advantage of the tax benefits associated with debt funding. This results in potentially high early-stage tax deductible expenses that contribute to the erosion of the tax base before the project even reaches the development stage. Due to limited capacities, very few tax administrations pay attention to this BEPS risk in the early stage of the mining project. In combination with statute of limitations and the long period of loss-carry forward, as evidenced by the findings of the Tax Inspectors Without Borders[7] (TIWB) programmes in Mongolia and Kazakhstan this practice is wide spread in Central Asia (OECD, 2025[9]; OECD, 2022[10]).

Excessive interest payments are widespread in MNE transactions generally and have been addressed in the BEPS Action 4 report (OECD, 2015[11])**, and a joint OECD and IGF document, *Limiting the Impact of Excessive Interest Deductions on Mining Revenue*** (IISD/OECD, 2018[12])**.**

There have been high-profile, significant disputes in countries like Australia and Norway in this area.[8] This issue has also been identified as omnipresent in Central Asia, and initial activities are already under way to help countries deal with this challenge. In Kazakhstan, the OECD and TIWB have delivered extensive training on the topic, given the significance of the risk in the country,[9] and similar training has been delivered in Mongolia by the OECD and IGF.[10]

Box 4.1. BEPS Action 4 report

In 2015, the OECD released the report '*Limiting Base Erosion Involving Interest Deductions and Other Financial Payments, Action 4 - 2015 Final Report*'. This was one of 15 BEPS Action reports released as part of the OECD/G20 Base Erosion and Profit Shifting Project.

The focus of this report was on how to ensure companies do not inappropriately minimise their taxes by claiming excessive debt related deductions. The key recommendation in this report is that limits on an entity's net financing deductions should be directly linked to its level of economic activity, based on taxable earnings before deducting net interest expense, depreciation and amortisation (EBITDA). Such a recommended limit is established through a fixed ratio rule representing 10-30% of tax EBITDA. The tax base can thus never be fully eroded by financing arrangements. To ensure reasonable outcomes, deductions exceeding the stipulated limit may be carried forward and deducted in future periods within the given fixed ratio.

If a country wants to adopt this recommendation, it needs to pass domestic legislation implementing it.

Source: OECD

BEPS risks linked to exchange-rate fluctuations

Given the long-term nature of extractive projects, where financing arrangements can be in operation for several years or even decades, this risk can result in significant profits being shifted out of the producing countries over an extended period. This issue of debt-structured financing is compounded by exchange-rate movements, because most debt instruments will be structured in a foreign currency and yet most Central Asian currencies have experienced gradual devaluation in recent years. This means that the liabilities recognised on the debtor's balance sheet have been gradually increasing in local currency terms. Foreign exchange differences are recognised as additional tax deductions in the jurisdiction of the debtor, contributing to the erosion of the tax base, while generally not representing any taxable income in the counterparty jurisdiction. Where lender and debtor are (as is often the case) related parties, this is an easy BEPS strategy to adopt and can also present in the form of interest-free loans. Where foreign currency rate movements are significant, the mere foreign exchange difference in relation to such an interest-free loan can erode the tax base and even result in carry-forward tax losses.

Debt/equity classification risks

Further issues can arise where a de-facto equity investment is treated as debt for tax purposes, allowing the debtor to claim interest and foreign exchange deductions. In the creditor's jurisdiction, however, the same instrument may be treated as equity for taxation purposes. The inconsistent classification of debt versus equity between jurisdictions can result in significant tax base erosion. This mismatch in taxation treatments means the interest and foreign exchanges are treated as deductible expenses in the jurisdiction with mining operations, while the corresponding income is treated as equity-based income (dividend) and subject to preferential tax treatment (mostly exempt from taxation) in the other jurisdiction. This outcome, with deduction and subsequent non-inclusion, is frequently exploited for

BEPS practices and is described as a hybrid mismatch arrangement. Specific recommendations have been formulated during the BEPS project in the Action 2 report (OECD, 2015[13]), but no Central Asian country has yet addressed this problem, and these recommendations remain relevant for all three countries in this study.

Box 4.2. BEPS Action 2 report

In 2015, the OECD released the report '*Neutralising the Effects of Hybrid Mismatch Arrangements, Action 2 - 2015 Final Report'*. This was one of 15 BEPS Action reports released as part of the OECD/G20 Base Erosion and Profit Shifting Project.

This report addressed 'hybrid mismatch' arrangements, which give rise to double non-taxation outcomes. These arrangements rely on different classifications and tax treatment of financial instruments or legal entities based on the domestic laws of two or more jurisdictions.

The key recommendation in this report is to neutralise the effects of such arrangements through a set of primary and secondary rules that align the tax outcomes and prevent the double non-taxation result. In the context of financial instruments this may be achieved either by denying a tax deduction that would otherwise be granted in the debtor jurisdiction (taking thus into account the tax treatment in the creditor's jurisdiction) or by including the income in the taxable base (where it would have otherwise been exempt, but the deduction was granted in the debtor's jurisdiction).

Risks arising from the transfer of mining licences

The offshore indirect transfer (OIT) of a mining licence occurs through the sale of shares in a foreign holding company that owns the shares of a local company, which in turn owns the mining licence. While there may also be commercial reasons for such indirect transfers, present a BEPS risk that requires careful attention.

The OIT of mining licences can allow investors to escape local taxation on large capital gains made from the sale of these domestic resource assets. Mining licences entitle the licence holder to explore or extract minerals from a specific location. As such, a mining licence can become extremely valuable, and its value is driven by the significance and economics of the underlying mineral deposit, world prices and scarcity of the particular mineral. Investors in this sector can sell valuable mining licences directly or transfer them indirectly by selling shares in the companies that hold those licences. Generally, the income or gain from the direct sale of the mining licence is taxable, most commonly as a part of business profits or capital gains of the company owning the mining license. The indirect transfer of a mining license executed via the transfer of shares, however, is often not taxed or may be subject to a more favourable tax treatment such as capital gain from the sale of shares. This difference in tax treatment, combined with the possibility to structure such transactions in a complex manner involving several layers of holding companies across multiple low- or no-tax jurisdictions is a common tax avoidance technique. Mineral rich countries are thus deprived through such practices of significant tax revenues (Box 4.3).

Box 4.3. OIT schemes – the case of Petrotech

An example of an OIT scheme is the Petrotech case from Peru. In 2009, Ecopetrol Colombia and Korea National Oil Corp purchased a Houston-based company (Offshore International Group Inc.) whose main asset was Petrotech Peruana (the license holder), a company incorporated and resident in Peru and the third largest oil producer there, for approximately US$900 million, from Petrotech International, a Delaware incorporated company. Since Peru's income tax law at the time did not have a specific provision taxing offshore indirect sales, the transaction remained untaxed in Peru. The potential foregone tax revenue for Peru was estimated at USD 482 million.

Source: (The Platform for Collaboration on Tax, 2020[14])

To ensure the neutrality and integrity of the tax system, countries should consider having robust rules in place to allow them to exercise their taxing rights over the transfers of such valuable mining licences. A suggested approach to this legislation is contained in The Taxation of Offshore Indirect Transfers — A Toolkit (the **PCT Toolkit**), a joint initiative of the IMF, OECD, UN and WBG (The Platform for Collaboration on Tax, 2020[14]). The toolkit proposes two models for domestic legislation. Countries should choose the most appropriate approach based on their circumstances (Box 4.5).

Box 4.4. Legislative options to address OIT schemes

The OIT toolkit proposes two legislative approaches to domestic legislation that can ensure effective taxation of OITs.

The first model places the tax burden on the resident entity holding the licence. There is a deemed disposal and re-acquisition of the mining licence when the OIT occurs. As such, the resident entity pays the tax on the capital gains accrued in respect of the licence at the time of the OIT.

The second model places the tax burden on the non-resident seller of the shares and requires an enforcement mechanism to ensure effective collection of tax – often placing the secondary tax liability on the domestic taxpayer where the non-resident fails to comply with the tax liability.

Source: (The Platform for Collaboration on Tax, 2020[14])

High-level legislation gap analysis and recommendations

Despite the gradual efforts undertaken by Kazakhstan, the Kyrgyz Republic and Uzbekistan to enhance and align their tax systems with international standards and best practices, a number of aspects of their tax frameworks do not yet align with international standards, potentially exacerbating the BEPS risks in their CRM sector. The ability of a country to address BEPS risks depends on its tax law, as the tax administration can only act against BEPS risks where the law allows it to do so. Where the legal framework diverges from international standards and best practices, some BEPS risks can be amplified and even constitute legally acceptable practices that cannot be challenged by the tax administration. By contrast, several BEPS risks can be mitigated where the legal framework is carefully designed in line with international standards and best practices, because such practices could become illegal and most MNEs will refrain from engaging in such activities that are made explicitly unacceptable.

A review of the fiscal frameworks of these countries, in combination with feedback received from other capacity building programmes, has identified several divergences from international standards that hinder the ability of these countries to effectively address the three key specific BEPS risks they are facing in their critical minerals sectors: under-pricing of critical minerals, abusive structuring and pricing of financing for mining projects, and offshore indirect transfers of mining licences.

Common recommendation 1: Introduce and enforce robust legislation to address the BEPS challenges identified in this report

Countries wishing to effectively address the BEPS risks and challenges identified in this report will need to take legislative action to fully align their domestic legal framework with international standards and best practices. Without taking legislative action, some of these BEPS risks may not be addressed and the challenges identified in this report will continue to undermine the revenue potential from the CRM sector. As demonstrated in the illustrative example in Table 4.1, such an effect on the national budget can be dramatic. If left unaddressed for several years or decades, the revenue losses may significantly undermine the development potential of the country, and this may result in lost opportunities.

Once the legislation is in place and is aligned with international standards and best practices, MNEs may choose to comply voluntarily with such legislative improvements. MNEs are less likely to engage in abusive BEPS practices where legislation in the form of primary law establishes clear rules that are aligned with international standards. The effect of voluntary compliance can be further enhanced by targeted guidance addressing the specific BEPS challenges, which may further clarify the application of the primary law provisions. There are nevertheless cases reported globally where MNEs still engage in BEPS practices, especially where the tax administration lacks the necessary administrative capacities or access to information from other jurisdictions. This amplifies the importance of the additional recommendations outlined below.

For the purposes of legal certainty, it is important to ensure that any of the recommended improvements to the legislation are only applicable prospectively – for future tax periods. It is not recommended to introduce any new compliance or tax obligations retroactively. This also means that the timing of introduction of such enhancements is critical. The sooner countries take their legislative actions, the faster they can expect to benefit from the voluntary compliance effect. Complex legal questions may however arise as to whether the investors benefiting from special fiscal stability clauses in their investment agreements should be immune to all these legislative changes that seek to address the existing weaknesses in the legislation resulting in BEPS practices.

The prevailing and broadly endorsed view on this issue is that bona fide anti-avoidance measures or the interpretation of existing laws by host governments to protect the revenue base against BEPS that are consistent with internationally recognised tax practices are not characterised as a change in law constrained by fiscal stabilisation clauses entered into between investors and governments. Such clauses should not prevent the legitimate application of updated, strengthened anti-avoidance measures that merely ensure that tax frameworks operate as intended, and are not new taxes (OECD, 2020[15]).

Common recommendation 2: Strengthen MNE accountability in responsible tax practices

While legislative reforms can enhance the integrity and fairness of tax systems, MNEs also bear responsibility for aligning their tax conduct with the principles set out in the *OECD Guidelines for Multinational Enterprises on Responsible Business Conduct*. These Guidelines—discussed in greater detail in Chapter 1—encourage enterprises to contribute to sustainable development and to prevent or mitigate adverse impacts on people, the environment, and society.

Two principles within the Guidelines are particularly relevant to taxation: first, that MNEs should comply with both the letter and spirit of the law; and second, that they should integrate tax governance and compliance into their overall risk management and corporate oversight frameworks. Both principles relate to issues and challenges described in this report. Where MNEs comply with the letter and spirit of the law there will be less MNEs engaging in BEPS practices that exploit gaps and loopholes in the tax law. Furthermore, addressing this substantive tax compliance at the level of corporate boards and ensuring robust risk management contributes towards responsible business conduct. Although accountability for responsible tax behaviour ultimately rests with MNEs, proactive and transparent engagement by governments with the business community is essential, and, if backed up by sound tax administration and enforcement, can make a difference. Such co-operation helps promote adherence to these principles while reinforcing mutual trust and accountability between governments and enterprises.

Common recommendation 3: Ensure transparency about the MNE operations and create a supportive framework to ensure targeted risk assessment and audits through an enhanced tax transparency framework

The tax administration should have access to information that allows it to identify BEPS risks, detect potential non-compliance and enforce relevant legislation. In the BEPS Action 13 report (OECD, 2015[16]), the OECD recommends that countries require the submission of three transfer pricing documents by MNEs – the Country-by-Country (CbC) report, Master File and Local File (see Box 4.5). Especially in the case of CbC reports there is an additional need for countries to share this information with each other, and to develop legal and secure systems to exchange confidential taxpayer information. This can be done through government-to-government mechanisms such as the Multilateral Convention on Mutual Administrative Assistance in Tax Matters (MAAC),[11] bilateral tax treaties or tax information exchange agreements.

The MAAC enables multilateral automatic exchange of information with automatic CbC reporting with over 100 jurisdictions through the CbC Multilateral Competent Authority Agreements (MCAA). By signing one MCAA a jurisdiction acquires access to the exchange network of all other participating jurisdictions without the need to negotiate and sign bilateral agreements with each exchange partner.

The MAAC allows jurisdictions to request a wide scope of information including CbC data which can be a starting point for the in-depth investigation of the MNE group's transactions. While Kazakhstan is a party to the MAAC and Uzbekistan has requested to be invited to join the MAAC, the Kyrgyz Republic could explore the benefits of becoming a party to the MAAC.

The Global Forum on Transparency and Exchange of Information for Tax Purposes (the Global Forum) is the multinational platform promoting administrative cooperation in tax matters that has currently 172 member jurisdictions, each participating on equal footing. The Global Forum provides support and training to developing countries on how to effectively use all forms of exchange of information. While Kazakhstan and Uzbekistan are members of the Global Forum and have access to the capacity building technical assistance, the Kyrgyz Republic could explore the benefits of membership.

Box 4.5. Transfer Pricing Documentation

BEPS Action 13 recommends that jurisdictions require MNEs to prepare three-tiered standardised transfer pricing documentation: a CbC report, a Master File, and a Local File. Together, these documents are designed to improve tax transparency and help tax administrations identify and address transfer pricing risks more effectively.

The three-tiered approach serves three main purposes: (i) to ensure that MNEs properly consider transfer pricing rules when setting prices for transactions between related companies; (ii) to give tax administrations the information needed to carry out targeted risk assessments; and (iii) to support focused and efficient audits, when necessary.

Each document has a distinct role:

- The **Master File** provides a high-level picture of the MNE group as a whole, including the nature of its global business operations, its overall transfer pricing policies, and its global allocation of income and economic activities. It helps tax administrations understand how value is allocated within the group.
- The **Local File** focuses on the local entity. It contains detailed information on the specific intercompany transactions carried out in a particular jurisdiction. The information required in the Local File supplements the Master File and helps to meet the objective of assuring that the taxpayer has complied with the arm's length principle.
- The **CbC Report** requires aggregate data for each jurisdiction in which the MNE operates, showing where profits, employees, and taxes paid are located. CbC reports are intended for high-level risk assessment only. It does not replace a detailed transfer pricing analysis and should not be used on its own to make transfer pricing adjustments.

When implemented effectively and supported by information-exchange mechanisms, this documentation framework strengthens a tax administration's ability to detect BEPS risks early, allocate audit resources where most needed, and promote voluntary compliance without creating excessive compliance burden.

Kazakhstan has become the first country in the Central Asian region to introduce the three-tiered transfer pricing documentation. Furthermore, it has the legal framework in place to be able to engage in effective exchange of information with most of the relevant jurisdictions in the world by having signed and ratified the MAAC in 2013 and 2015 respectively. Since Kazakhstan also implemented the mechanisms for automatic exchange of information, it can engage in automatic exchange of information on bank accounts (through the Common Reporting System), as well as the Country-by-Country reports. It can also request administrative assistance in various forms from more than 115 jurisdictions around the world, including low- or no-tax jurisdictions, where Kazakhstan does not have other international treaty instruments to request and obtain such assistance (OECD, 2026[17]).

Common recommendation 4: Ensure high-skill capacities in tax administration by introducing suitable professional career conditions as well as policies that promote hiring and retention of skilled experts

Identifying and auditing BEPS risks, as well as applying corresponding legislation, requires strong administrative capacity in the tax administration. The tax administrations of Kazakhstan, the Kyrgyz Republic and Uzbekistan are at differing stages of development, yet their capacity to address international tax matters has been established only recently. The BEPS challenges discussed in this chapter are

sophisticated and as such require highly skilled personnel to detect and audit such practices. The skills required include advanced knowledge of international taxation and transfer pricing, in depth knowledge of the critical minerals sector and corporate finance as well as proficiency in foreign languages. Since the tax administrations' personnel also often interacts with foreign investors and MNEs, their actions also represent the tax administration externally. Where the administrations do not invest in attracting, developing and retaining the expertise needed, taxpayers may take it as a sign that compliance with the law is not effectively enforced. Furthermore, where the tax administration experts lack the necessary level of knowledge or skills, they may misinterpret the facts and circumstances of a particular case, resulting in incorrect tax assessments under international standards. The lack of such expertise may thus have a negative impact not only on the tax revenues but also on the investment climate. All three countries need to do more on this issue, while ensuring that their tax administration becomes an attractive employer for high-skilled experts and professionals.

Country-level gap analysis

Kazakhstan

Key issue 1: Capacity to administer transfer pricing legislation is still developing

Kazakhstan is progressively aligning its transfer pricing legislation with international standards, particularly following reforms undertaken in 2024–25; however, the capacity of the tax administration to effectively enforce this relatively new framework is still being developed. The transfer pricing legislation has measures that reduce the risk of mineral under-pricing. The law requires the CUP method to be applied as a default method for transactions involving critical minerals and other mineral commodities. Appropriate adjustments are also mandated by the legislation[12] to determine an appropriate arm's length price. To motivate voluntary compliance, based on Article 10 point 10 of their transfer pricing law, Kazakhstan has further developed a secondary legal framework, which contains the pricing methodology for selected types of commodities.[13] Where taxpayers comply with this methodology, the tax administration will limit its compliance activities to reviewing how it is applied in specific cases. This guidance has significantly contributed towards tax certainty and enhanced voluntary compliance. However, this methodology currently does not cover most critical minerals and there is potential to expand its scope with the development of additional relevant guidance.

Despite this strong legal framework, Kazakhstan continues to experience revenue loss from mineral under-pricing, as evidenced by recent findings of the TIWB programme. Some MNEs choose to remain non-compliant, assessing that the potential gains from avoiding tax in Kazakhstan outweigh the risks and consequences of detection. This underscores the importance of promoting corporate responsibility in taxation, but even more critically, highlights the need for a highly skilled and well-resourced tax administration equipped with robust risk assessment tools to ensure compliance without creating undue distortions to business operations.

One of Kazakhstan's key objectives is to encourage voluntary compliance through enhanced risk assessment processes, while also attracting, developing and retaining highly skilled professionals within the tax administration and engaging constructively with taxpayers. Based on prior OECD recommendations, the State Revenue Committee made significant progress during 2022-2023 by completing the first phase of building a dedicated transfer pricing team of nine experts at its headquarters. This team includes specialists recruited from the private sector, who bring valuable practical experience and industry knowledge. Investment in these specialised human capacities has already generated significant returns. Between 2022 and 2025, the total assessed tax amount reached approximately USD 566.4 million, of which around USD 363.6 million has been collected, with the remainder currently subject to administrative and judicial appeal. Enhanced proactive risk assessment engagement, combined with

measures to encourage voluntary compliance, has also produced strong results, with a further approximately USD 73.7 million received from voluntary adjustments by taxpayers without direct intervention by the tax administration. Such compliance strategies significantly improve overall tax compliance and reduce the number of cases requiring lengthy and complex litigation. Nevertheless, further efforts are needed to continue strengthening this pool of professional expertise and, given the scale and importance of Kazakhstan's economy, to extend these capacities to regional tax administration levels.

Recommendation: **Continue and sustain investments in building the capacity of the tax administration at both central and regional levels to apply transfer pricing legislation effectively**. Further enhance risk assessment and monitoring tools and strategies to ensure early detection of deviations from the arm's length price, and expand the voluntary compliance initiatives to guide taxpayers into compliance.

Key issue 2: The use of offshore trading hubs by MNEs remains widespread

The key challenge detected during the TIWB programme relates to MNEs' continued use of offshore trading hubs. Offshore trading hubs are entities located in jurisdictions with low or no taxation, which purchase minerals from mineral-producing entities operating in Kazakhstan and then re-sell them to third parties at the market price. In most cases where non-compliance was identified, these trading hub entities claimed significant profit margins on the resale of the commodity, which did not correspond to the actual functions they perform, assets they use and actual risks they assume. These entities were identified as having little or no functional substance and, even for the functions they claim to perform, were found to have outsourced them either to other related parties or to third-party service providers.

The effective exchange of information with other jurisdictions is critical to combating such practices. On this front, Kazakhstan has implemented key international standards on the exchange of information and, as noted above, signed the MAAC, which enables it to request information from offshore jurisdictions with which Kazakhstan does not have bilateral tax treaties. While Kazakhstan continues to enhance the exchange of information framework, it is already able to benefit from the active use of relevant tools, including the ability to receive and exchange CbC reports. Combined with other elements of the BEPS Action 13 transfer pricing documentation, namely Master File and Local File, as well as monitoring reports on transfer pricing, Kazakhstan has the necessary tools in place to benefit from tax transparency and actively use it for risk assessment and effective tax audits.

Kazakhstan is also making efforts to enhance and align its transfer pricing legislation with the international standard represented by the OECD TPGs. The legislation is being enhanced gradually through annual updates. The OECD has provided technical assistance in developing the legislation and continues to support capacity building for its administration. Kazakhstan has also benefited from a TIWB programme. During 2021-23, audit cases conducted under the TIWB programme raised an additional USD 211 million in assessed tax (OECD, 2025[9]).

Overall, the OECD has seen notable improvements in Kazakhstan's capacity to apply the transfer pricing legislation. Kazakhstan's reference to a quoted price for exchange traded commodities is positive, as it aligns with the OECD TPGs. However, Kazakhstan needs to ensure that the relevant comparable adjustments are taken into account for any material differences between the quote price and tested transaction.

Recommendation: **Develop guidance on determining the appropriate remuneration of such offshore trading hubs** to ensure that such entities are remunerated only for the actual value they create through their genuine economic functions, which may also be reflected in the operational costs borne by such entities in performing those functions.

Key issue 3: Interest limitation rules are not aligned with international best practices

Kazakhstan has thin capitalisation rules in Article 263 of the Tax Code.[14] An entity is considered to be thinly capitalised when its funding relies heavily on debt rather than equity. Thin capitalisation can be used as a BEPS strategy because interest on debt is generally tax deductible. As a result, companies may structure their financing arrangements to artificially increase debt levels in order to claim higher interest deductions. This practice is addressed in the OECD's BEPS Action 4 report (OECD, 2015[11]) (see Box 4.1), and Chapter X of the OECD Transfer Pricing Guidelines (OECD TPGs) also provides further guidance on how to deal with such challenges from the perspective of transfer pricing.

In the case of Kazakhstan, the thin capitalisation rule is based on a debt-to-equity ratio of 4:1 for non-financial institutions. This means that, where a company's level of debt exceeds four times its equity, deductions related to the debt exceeding that limit are restricted.

However, a thin capitalisation rule based on a debt-to-equity ratio does not fully achieve the intended policy objectives and is vulnerable to exploitation by MNEs. The key weakness of such rules is that the taxpayer can easily manipulate the debt-to-equity ratio either with additional cash or asset contributions to equity or through asset valuations, ensuring a level of equity that will allow the deduction of all interest expense payments. A company's equity valuation is heavily influenced by its asset value, which represents two tax policy issues. First, asset-based measures such as the debt-to-equity ratio are not the primary method used by lenders to assess the borrowing power of a company – they will instead look at a company's cash flow when assessing its ability to service debt. Therefore, asset-based measures do not accurately reflect a company's borrowing capacity. Second, a company may manipulate its asset values for tax purposes if there is no prohibition on the revaluation of asset values for tax purposes. This artificially inflates the value of the equity, and therefore artificially inflates the deductions they can claim.

Further, a 4:1 debt to equity ratio represents a high level of gearing for a non-financial entity and sets the deduction threshold at a level that does not effectively constrain excessive debt financing. As discussed above, thin capitalisation rules are intended to approximate a commercially justifiable level of leverage, allowing interest deductions only up to that level.

Recommendation: **Adopt the international best practice approach to interest limitation, as outlined in BEPS Action 4 report, being a net interest deduction to the EBITDA[15] ratio of 10-30%.** This addresses both the concern of the ratio being based on equity values, and the ratio being too generous. The practical effect of these rules is that the taxpayer can never fully erode the tax base via abusively structured financing arrangements. The BEPS Action 4 recommendations also require a broad definition of interest, which also covers the payments equivalent to interest, such as guarantee fees and foreign exchange differences arising in relation to indebtedness. For the excess amount of interest, the taxpayers may be allowed to carry forward the excessive interest expense, unless this amount is further limited by the application of other targeted anti-avoidance rules, such as a well-designed thin-capitalisation rule or the application of transfer pricing rules. This ensures that bona-fide taxpayers do not lose their right to deduct the legitimate interest expense in future tax periods, assuming they earn sufficient profit levels to utilise those excess carry forward interest positions.

Key issue 4: The ability of the current legislation to tax OITs is undermined by exemptions in the law

Kazakhstan has laws that can be applied to tax the disposal of mining licenses through offshore indirect transfers, but current exemptions may give rise to abuse. Kazakhstan has a robust rule, accompanied by a special enforcement mechanism, which corresponds with the Model 2 from the PCT toolkit. Specifically, article 679(1)(7) provides that a capital gain made from the sale of a non-resident entity is taxable in Kazakhstan if 50% or more of the value of the assets is derived from property located in Kazakhstan.

However, there is an exemption in Article 681(4), which states that the gain is not taxable where the share sale occurs through open bids on a stock exchange operating in Kazakhstan. Any such exemption from the general rule, despite having potentially sound policy rationale, may give rise to abuse as was observed in other cases, where premeditated transactions are carried out via stock-exchange transactions.

Recommendation: **Design and implement the risk assessment procedures to ensure the timely detection of indirect transactions executed through any Kazakhstan stock exchange and compliance with the existing rules.** This includes monitoring the large-scale transactions of mining license transfers executed via Kazakhstan stock exchanges. Where such abuse of this exemption or other special regimes (such as transactions structured via the Astana Financial Centre) is detected, Kazakhstan's tax administration may consider invoking the recently introduced General Anti-Avoidance Rule and/or rethink the design the operation of such exemption and special regime. Focus should also be directed on ensuring the full disclosure of the transaction details, where the transaction may be complex and involve multiple types of considerations, such as cash, exchange of shares, contingent payments or special mining royalties.

The Kyrgyz Republic

Key issue 1: The country currently lacks specific transfer-pricing rules

Existing rules explicitly allow taxpayers to diverge from market prices in mineral sales by up to 20%. This is an extremely large deviation and raises the prospect and opportunity for significant under-pricing of minerals. In addition, the Kyrgyz Republic has not introduced specific transfer pricing legislation. There are provisions in Articles 139 and 140 of the Kyrgyz tax code that require transactions broadly to be priced at a "market price". Market price is defined as either the state-regulated price for goods, works and services that have state-regulated prices, prices on recognised exchanges for metals and petroleum products, the price in the quarterly price bulletin of the National Statistical Committee of the Kyrgyz Republic, where there is such a price, or the price arrived at by applying certain methods, which are similar to three of the five OECD transfer-pricing methods.

There are many deviations in these rules as compared to the international standard and best practice as contained in the OECD Transfer Pricing Guidelines. Most significantly, as noted above, under Article 139, the tax administration is only able to adjust the price where it deviates from the "market price" by more than 20%. This means that companies are legally able to sell critical minerals for 20% below the arm's length price. In some cases, this means that the whole profit margin can be erased, leaving little or no profit to be taxed in the Kyrgyz Republic. Such under-pricing of minerals would also affect mining royalty revenues and the withholding tax on repatriation of profits (dividends), since such profits are not recognised by the companies in the Kyrgyz Republic, instead being booked by foreign companies in low- or no-tax jurisdictions. The fiscal effects of this legally permissible divergence should thus be considered in the context of the illustrative example in Table 1.1.

Recommendation: **Introduce modern transfer pricing legislation to align the market price framework with international best practices and the arm's length principle in the case of related party transactions.** Additionally, most importantly, remove the ability for companies to misprice transactions by 20%, so that the tax administration can apply the transfer-pricing laws to any transfer mispricing.

Key issue 2: The use of the sales price as the tax base for certain minerals presents an under-pricing risk.

There is a special income tax regime for gold, silver, copper, antimony, mercury, tungsten and tin in Chapter 33 of the Tax Code of the Kyrgyz Republic. Instead of using the arm's length principle to determine the price of minerals for tax purposes, this regime determines the price of the critical minerals

to be the quoted prices where they are in ore/concentrate form, or actual sales price where they are in processed form (noting that, as above, the sales price might be 20% below the arm's length price). The gross tax rate applied to these prices ranges from 1 to 21%, based on the quoted price of the mineral.

Not using the arm's length principle to determine the price of the mineral combined with legally permissible divergence of 20% presents a significant transfer pricing risk. The risk primarily exists for the minerals sold in processed form which are taxed on the basis of sales price. On the other hand the use of the quoted prices for the minerals in ore/concentrate form approximates the CUP method, which is generally the preferred transfer pricing method for these minerals. The risk is compounded by the fact that this special corporate income tax is a gross tax, meaning no deductions are recognised, unlike most corporate income taxes which are profit-based, so a company has in incentive to lower the mineral sale price so that less tax is payable.

Recommendation: **Total alignment with the international standard would require that the price of these minerals, in both forms, be determined on the basis of the most appropriate of the five transfer-pricing methods**, of which the CUP would be likely the most appropriate. A similar approach already applies to the minerals in the intermediate form – namely the use of quoted prices for these minerals when sold in both ore/concentrate and processed form with appropriate adjustments to ensure comparability and an appropriate arm's length price.

Key issue 3: The absence of transfer pricing documentation, limited disclosure requirements and the absence of risk assessment tools increase transfer pricing risks

Having information on a company's related party transactions is crucial for tax administrations to identify and effectively audit transfer pricing risks. The BEPS Action 13 report (OECD, 2015[16]) recommends that countries introduce requirements for taxpayers to prepare and submit three layers of documentation for this purpose – a Country-by-Country report, Master File and Local File. Many countries have these requirements in place.[16] The Kyrgyz Republic does not require in-scope taxpayers to prepare or lodge any of these documents. It would therefore be exceptionally difficult for the tax administration to identify and audit transfer pricing risks, even with the introduction of transfer-pricing legislation.

Recommendation: **Introduce legislation requiring the preparation of three-tiered transfer pricing documentation**, in line with BEPS Action 13. Introduce a monitoring/risk assessment tool to enable early-stage risk assessment, such as the annual transfer pricing return or its equivalent. It is further recommended that the Kyrgyz Republic signs and ratifies the MAAC, to allow for effective exchange of information with other tax administrations. It is also necessary to introduce mechanisms for the Kyrgyz Republic to be able to effectively access relevant information held by other tax administrations. As discussed above, many countries, including Kazakhstan, have legislation in place that allows them to send and receive information with other tax administrations that can be used to identify and audit risks.

Key issue 4: The capacity of the tax administration is currently insufficient to address transfer pricing and other BEPS risks

As transfer pricing has not historically been a key focus for the government, the Kyrgyz Republic has not made significant investment in its transfer pricing legislation and administrative capacity. However, they have demonstrated recent interest in doing so and have been working constructively with the OECD Secretariat, which currently provides technical assistance to address these challenges.

Recommendation: **Continue and maintain the investments in building the capacity of the tax administration in transfer pricing**, and for the Government to ensure there are effective policies in place to attract and retain talent. Development of adequate human capital in this sphere is essential if the legislation is to be effective. The level of taxpayer's compliance with the tax legislation will have a direct

correlation with the administrative and compliance efforts and the tax administration will play a critical role in ensuring correct application of international standards on transfer pricing and other BEPS challenges.

Key issue 5: No interest-limitation rules are currently in place, which translates into an over-reliance on largely missing transfer pricing rules

The Kyrgyz Republic does not have any protection from abusive structuring of related party financing arrangements. It lacks any form of interest-limitation rules, and the current rules do not allow application of transfer pricing rules or market price concept to financial transactions. The Kyrgyz Republic is thus fully exposed to this risk. As discussed above, the Kyrgyz Republic only has basic transfer pricing rules, which are not aligned with international best practice, but the explicit prohibition in the law excludes even application of those rules to financial transactions.

Recommendation: **Adopt interest-limitation rules that align with international best practice approach, being a net interest deduction to EBITDA ratio of 10-30%** (see Box 4.1). Furthermore, implement adequate and modern transfer pricing rules to further address this risk.

Key issue 6: Legal provisions addressing indirect offshore transfers are in place but have a design weakness, which undermines their effectiveness

The Kyrgyz Republic has a special provision that contemplates taxing offshore indirect transfers in Article 174 of the Tax Code, but the formula to calculate the sale price may undervalue the transaction. Under this law, income includes income received by a foreign organisation or a foreign individual from the sale of a share in the capital or other share in a domestic organisation. Therefore, the offshore indirect transfer would be taxable in the Kyrgyz Republic. However, income is determined as the "the positive difference between assets and liabilities in the organisation's balance sheet, drawn up on the date of the decision on such sale, proportional to the amount realised". This does not necessarily reflect the actual sale value, which may be significantly higher than the book value (which typically reflects the historical cost value), as the agreement between buyer and seller may not necessarily value the transfer based on the accounting values of assets minus liabilities. The objective of indirect offshore transfer rules is to tax the gain, which is the difference between the original investment and actual market value of the mining license, which may be significant due to successful exploration and development activities. This current approach does not enable the Kyrgyz Republic to determine and to tax that actual capital gain derived from such transactions.

Recommendation: **Amend this provision to implement one of the two suggested approaches from the PCT toolkit** (see Box 4.4). Any approach chosen will require the determination of the capital gain with reference to real market value of the transferred license, rather than relying on historical accounting values. Also, any such approach will also require effective enforcement rules to ensure early detection and effective audit of such transactions.

Uzbekistan

Key issue 1: Administrative capacity to enforce transfer pricing legislation remains low

Uzbekistan recently introduced transfer pricing laws, largely derived from Russia's transfer-pricing legislation. As a result, these rules are only partially aligned with international standards and lack the key provisions and principles derived from the 2015 BEPS project despite the fact they entered into force in 2022. Due to the legislation's relatively recent introduction, administrative capacity to enforce the rules is still developing. The pre-conditions are in place as the existing rules could allow the tax administration to deal with some of the key risks in respect of the critical minerals under-pricing. The tax administration has a small but dedicated team of experts working in transfer pricing. Like Kazakhstan, Uzbekistan's legal

framework requires the CUP method be applied first if it can be reliably applied, which provides some degree of clarity on what method should be used. However, unlike in Kazakhstan, there is no further guidance on how to apply the CUP method to the key critical minerals exported from Uzbekistan.

The tax administration has experienced administrative and technical challenges obtaining taxpayer documentation due to weaknesses in tax policy design and implementation gaps. The transfer pricing documentation is currently limited to only some elements of the Local File and an annual transfer pricing notification. Important elements of the Local File needed for effective risk assessment and tax audit are not currently required. Master File and Country-by-Country Reports are currently not required. These gaps, as well as limited administrative capacities, prevent the tax administration from ensuring compliance with the transfer pricing rules through the effective risk assessment as well as challenges preventing the initiation of tax audits. The OECD Secretariat is currently providing technical assistance to overcome these challenges.

Recommendation 1: **The tax administration should continue the investment into building a highly skilled and motivated team of experts and to scale up the initiatives, with a focus on targeted risk assessment and transfer pricing audits.** This includes developing effective risk assessment tools and processes to enable early risk detection and thus enable effective and targeted tax audits. Administrative capacities to administer transfer pricing rules should also be built at the inter-regional department for large taxpayers and gradually also in the regional offices.

Recommendation 2: **Address the legislative gaps that constitute divergences from international standard and best practices, and ensure the implementation of the transfer pricing documentation best practice as recommended in the BEPS Action 13 report (see Box 1.5),** being the Master File, Local File and Country-by-Country reports.

Key issue 2: Maintain the special rent tax and ensure its effectiveness as well as the level playing field among investors

Uzbekistan has a "special rent tax" that applies to the extraction of minerals, contained in Chapter 64.1 of the income Tax Code. Various changes have been introduced over the past three years, resulting in an uneven playing field, where some projects and investments are already subject to this tax while other investors benefit from ad hoc exemptions. The uneven playing field will have a detrimental effect on the investment climate and will trigger further calls for exemptions and changes that can render this tax ineffective. Further legislative changes are currently pending, which, when combined with the special concessions, may impact the ability of Uzbekistan to raise revenue effectively from this tax. The tax is applied to "rent income", defined as the "price applied by the parties to the transaction" minus certain deductions, at a rate of 25%.

Recommendation*:* **Resist the pressures to repeal this tax**. Ensure careful calibration of this tax through economic modelling and consider introducing a cap on deduction of historical expenses, which also benefit a from generous uplift. Such historical costs may have been subject to abusive BEPS practices due to historical absence of transfer pricing rules and continued limited capacities of tax administration.

Key issue 3: interest limitation rules are not aligned with international standards

Uzbekistan has thin capitalisation rules in Article 310 of the Tax Code. At a high level, the thin capitalisation rule in Uzbekistan is based on a debt-to-equity ratio of 3:1 for non-financial entities. This rule determines the debt-to-equity ratio only with reference to debt with related parties and ignores existing indebtedness from unrelated parties. This is a significant weakness of the design of this rule, because it will unavoidably result in excessive interest deductions due to the fact that the taxpayer can get fully commercially leveraged with debt from unrelated parties and further additional financing may be structured as debt from related parties within the given statutory limit of debt-to-equity ratio. This may result in an

uncommercial level of debt leverage, that may then result in full tax base erosion. As above, in relation to Kazakhstan, having a thin capitalisation rule that is based on a debt-to-equity ratio is vulnerable to exploitation by multinational entities. Further, the 3:1 leverage ratio is relatively high and even when both related and unrelated party financing will be considered – it will result in uncommercially high levels of debt.

It is noted that Uzbekistan also has a special rule in Article 299 of the Tax Code that effectively requires recognition of income where certain benefits are derived by taxpayers – such as when receiving goods or services free of charge or below the market price. This includes also benefits derived from some financial transactions, such as outbound interest-free-loans and certain domestic loans. Under this rule, where the interest rate on a loan is either zero or is below the official interest rate as determined by the Central Bank of Uzbekistan, the debtor is deemed to receive a benefit equal to the amount of interest they would have otherwise had to pay, which is deemed to be assessable income of the debtor company. The effect of this rule should be further analysed to better understand its effectiveness to protect the tax base while preventing potential spill-over effects.

Recommendation: **Adopt the international best practice approach to interest limitation as outlined in BEPS Action 4, being a net interest deduction to EBITDA ratio of between 10-30%** (see Box 4.1). To the extent that Uzbekistan desires to also maintain this targeted thin capitalisation rule, it should be carefully recalibrated to ensure its effectiveness and reasonability, and include the third-party debt into the calculation of the debt-to-equity ratio and review the allowable debt-to-equity ratio to ensure that it is appropriate.

Key issue 4: Absence of effective rules to tax an offshore indirect transfer

Uzbekistan does not have rules that can be applied to effectively tax a mining licence sold through the offshore indirect sale of a licence. Uzbekistan does have provisions in Article 356 of their tax code that apply to recognise income earned by non-residents in Uzbekistan from the sale of shares of Uzbekistan resident legal entity. The weakness of this rule is that it applies only to direct sales of the Uzbek resident company, but the rule will not apply in case sales executed indirectly when such transfer is executed via sale of shares of foreign holding company, which owns the shares in Uzbek company. As such, this rule is not able to apply to OIT schemes and the tax on capital gain can be avoided by MNEs.

Recommendation: **Amend this provision** so that it allows Uzbekistan to tax the sale of a mining licence sold through an OIT or introduce a new provision allowing the taxation of OITs, aligned with the most appropriate model from the PCT toolkit (see Box 4.4).

Opportunities and risks in the context of attracting the investment into critical raw materials sector

While a review of tax incentives in these countries is outside of the scope of this chapter, the authors note that Central Asia faces fiscal challenges associated with the "race to the bottom", which may be exacerbated by efforts to attract investment in the CRM sector. The "race to the bottom" refers to the lowering of corporate or other tax rates by countries to compete for mobile investment, resulting in erosion of their tax bases and reducing governments' capacity to finance public goods, often without generating net new investment.

Tax incentives can be effective in encouraging investment but come with risks and costs. In particular, tax incentives can generate fiscal costs, and if they are not properly designed, they can give significant tax relief for investment or activity that is happening or would have happened anyway in the absence of the incentive (pure windfall gain). This risks forgoing tax revenue without creating additional investment.[17] They may also encourage firms to focus on tax planning (to maximise their fiscal benefits)

rather than new investment. Tax incentives can also exacerbate BEPS risks when they are not accompanied by sufficient integrity measures. Moreover, harmful tax incentives are particularly common in the mining sector and significantly erode government revenues from mining projects (IMF, 2021[2]). An example of this is when critical mineral projects receive a reduced corporate tax rate or when part of the activities (such as processing and refining) benefit from a full corporate tax exemption. If one part of a company's business has access to a reduced corporate tax rate, the company is incentivised to shift income from one part of the business activity into the other business activity, to utilise the lower tax rate.

Corporate tax rates are already relatively low in Central Asia, with the Kyrgyz Republic's at 10%, Uzbekistan 15%, and Kazakhstan 20%, all below the OECD/G20 Inclusive Framework[18] average of 21.2% in 2025 (OECD, 2025[18]). Moreover, they have comparatively low overall tax-to-GDP ratios.[19] In 2023, Kazakhstan had a tax-to-GDP ratio of 19.5%, while Uzbekistan's stood at 11.5% and the Kyrgyz Republic had a somewhat higher tax-to-GDP ratio of 21.9% despite the low corporate income tax rate.[20] These are all below the OECD average of 34.1% in 2024 (OECD, 2025[19]).

Despite these overall low tax rates, tax incentives appear to be relatively common in Central Asia, for example through Special Economic Zones (which reduce the tax rates on activity in certain geographical areas) or exempt business fully from taxation, sometimes without even a filing requirement). The OECD Investment Tax Incentives Database (ITID) (OECD, 2025[20]) shows that 62% of all 70 emerging and developing economies in the ITID grant some form of tax incentive for extractive industries. Income-based incentives (e.g. tax exemptions or reduced rates) appear less common in the extractives sector than in others but remain prevalent. Income-based tax incentive are often associated with low 'bang for the buck' (i.e. little additional investment per dollar spent) and opportunities for shifting profits even domestically – mainly because they do not tie the tax benefit directly to investment. Although not specific to Central Asia, these statistics illustrate both the importance of investment tax incentives in the relevant sectors and the diversity in their design, pointing to the need for further work.

Recently growing importance of Central Asian countries in the critical minerals supply chains may also lead to pressures from investors for new tax incentives for investments targeting this sector. Any such tax incentive should be carefully considered to assess the potential benefits as well as potential revenue expenditures associated with such measures. The risks associated with tax incentives are not only related to the direct tax expenditure, but introduction of such exemptions give rise to the additional risks of profit shifting that such incentives and tax exemptions trigger. This is because the profits can be shifted also within two companies in the same country to maximise the value of such incentives and exemptions and such issues may also arise in the context of the same legal entity, where different activities may be subject to different tax rates and tax regimes.

Beyond reforming tax incentives, one integrity measure that can be used to reduce revenue risks created by tax incentives is the ring-fencing of a company's mining projects/business operations for tax purposes,[21] to reduce the ability to artificially shift income/expenses between projects, as described in the joint publication between the OECD the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)*, Ring-Fencing Mining Income: A Toolkit for Tax Administrators and Policymakers* (OECD; IISD, 2025[21]). While not a response to all BEPS practices, ring-fencing can discourage investors from structuring base erosion arrangements, artificially inflating exploration or development expenditures, or abusing specific tax incentives. However, as the OECD-IGF report makes clear, the design of the ring fence is not a simple matter: the potential downsides include slowing or postponing the potential tax savings that can result from consolidation, which can discourage mining investment, particularly in marginal ore bodies, and it can increase the administrative burden on tax authorities and raise the cost of tax compliance for taxpayers. Nonetheless, it merits careful consideration by governments of mining jurisdictions.

Overall, the general recommendations include that tax incentives are only used when their expected benefits outweigh their costs and that they need to be justified and aligned with national

priorities. Their design should limit unnecessary costs and distortions and their impact should be evaluated regularly and carefully and lead, where necessary, to reform (IMF-OECD-WB-UN, 2025[22]; OECD, forthcoming 2026[23]). Tax incentives should be designed to ensure additionality and avoid windfall gains (i.e., to avoid subsidising activity that would have occurred anyway).

Where it is deemed expedient to introduce specific tax incentives for investors, these incentives should focus on expenditure (rather than income) and on forms of support that will foster new, self-sustaining activities. If direct tax incentives are considered, for example, they should be linked to the process of capital formation (e.g., accelerated depreciation, investment tax credits). Such expenditure-based incentives can directly reduce the cost of capital for new investment projects, and they can also be easier to phase out than income-based incentives, as their significance tends to wane as the project matures. By contrast, income-based incentives, such as CIT holidays and exemptions or reduced tax rates, risk limited additional investment, can offer windfall benefits to profitable projects and can often encourage tax planning and transfer pricing in an effort to shift activity from non-exempt to exempt enterprises. In addition, income-based incentives may offer little to firms engaged in capital-intensive, risky new projects that, in the early stages of development, may not generate income; expenditure-based incentives can be more valuable. Furthermore, these countries will need to consider the implementation of the Global Minimum Tax (Pillar Two), which will have a pronounced impact of the effectiveness of tax incentives (particularly those that are income-based).

Conclusion

For Kazakhstan, the Kyrgyz Republic and Uzbekistan to receive appropriate revenue from the exploitation of their critical mineral reserves, it is important that they ensure their international tax framework is aligned with international best practices, particularly those identified in this report. The primary challenges they face are related to mineral pricing, financing, and the transfer of mining licences. This chapter makes country-specific recommendations on how each country can align their fiscal framework with such practices. In making these changes, there is various assistance available, such as online toolkits and training resources, the OECD TPGs, publications containing the recommendations on relevant OECD BEPS Actions, and capacity building assistance from the OECD Secretariat and TIWB. Addressing the challenges set out above will help Kazakhstan, the Kyrgyz Republic and Uzbekistan maximise the benefits arising from development of their mineral resources and improve domestic resource mobilisation. There is much to do, but the returns from successful reforms to tax policy and administration in the sector will be great, for both current and future generations of citizens in all three countries. And the OECD stands ready to assist.

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Notes

[1] See cases emerging in public domain as a result of administrative and judicial disputes Commissioner of Taxation v Glencore Investment Pty Ltd (Australia), Canada v. Cameco Corporation (Canada), and the recent dispute between Southgobi Sands LLC and the Tax Dispute Resolution Council in Mongolia

[2] This assumes the application of the reduced rate of withholding tax due to application of benefits derived from bilateral tax treaties. Full domestic rates are typically 15%.

[3] See further the disputes Commissioner of Taxation v Glencore Investment Pty Ltd and Canada v. Cameco Corporation

[4] See the following guidance from the OECD TPGs at 2.18 on the meaning of 'quoted price': *The term "quoted price" refers to the price of the commodity in the relevant period obtained in an international or domestic commodity exchange market. In this context, a quoted price also includes prices obtained from recognised and transparent price reporting or statistical agencies, or from governmental price-setting agencies, where such indexes are used as a reference by unrelated parties to determine prices in transactions between them*

[5] See the discussion in the OECD Transfer Pricing Guidelines at paragraphs 2.18 to 2.21

[6] See further the discussion at paragraphs 10.76 to 10.80 of the OECD Transfer Pricing Guidelines

[7] TIWB is a joint initiative of the UNDP and the OECD, which deploys tax experts worldwide to help developing countries build international tax audit and investigation capacity through work on real audit and criminal tax investigation cases.

[8] See further the disputes Chevron Australia Holdings Pty Ltd v Commissioner of Taxation (Australia), Norway vs Petrolia Noco AS (Norway)

[9] See further OECD (2025), *Tax and Development Case Study: Strengthening the capacity to tackle tax avoidance in Kazakhstan*, OECD Publishing, Paris

[10] See further OECD (2022), *Tax and Development Case Study: Tackling multinational tax avoidance in Mongolia*, OECD Publishing, Paris https://www.oecd.org/content/dam/oecd/en/topics/policy-issues/tax-and-development/tackling-multinational-tax-avoidance-in-mongolia.pdf

[11] The Multilateral Convention on Mutual Administrative Assistance in Tax Matters was developed jointly by the OECD and the Council of Europe in 1988 and amended by Protocol in 2010. With 150 participating jurisdictions, it is currently the most comprehensive multilateral instrument available for all forms of tax co-operation to tackle tax evasion and avoidance.

[12] See, Republic of Kazakhstan, *Law on Transfer Pricing* (Law No. 67-IV of 5 July 2008, as amended, Articles 10(2) and 13.

[13] The minerals covered are natural uranium concentrate; titanium sponge; titanium ingots (including those produced by electron-beam melting); primary magnesium ingots; natural gas; crude oil; gas condensate; sulphur; and steel products (cold-rolled, hot-rolled and galvanised steel).

[14] Thin capitalisation rules cap the amount of debt for which interest is tax deductible. Typically, interest deductibility is restricted if a measure of the company's debt relative to its assets or equity exceeds a certain ratio. A company is considered thinly capitalised if its level of debt greatly exceeds its equity (i.e., it is highly leveraged).

[15] Earnings before interest, taxes, depreciation, and amortisation.

[16] At the time of this report, around 120 jurisdictions required at least Country-by-Country reporting

[17] The Platform for Collaboration on Tax has released a set of general Tax Incentive Principles (not focusing on CRMs) to help policymakers identify and secure any potential social gains from tax incentives while avoiding their pitfalls (IMF-OECD-WB-UN, 2025[22]). The OECD has developed a Practical Guide to Investment Tax Incentives to support policymakers and practitioners to better design and implement tax incentives based on these principles (OECD, 2025[1]).

[18] The OECD/G20 Inclusive Framework is a group of over 145 countries and jurisdictions

[19] A tax to GDP ratio measures tax collected compared to the size of the economy, as measured by GDP.

[20] This may in part reflect issues related to the measurement of the informal economy in Kyrgyz GDP statistics, but also the surge in re-export activities since early 2022

[21] Ring-fencing of mining income is an approach that requires each mine or project to be taxed separately, rather than allowing multiple mines to be taxed on a consolidated basis. This means that revenue, deductions, and ultimately tax liability are assessed on a mine-by-mine or project basis, preventing profits from one mine or project from being reduced by losses from another.

Advancing Security and Transparency for the Governance of Critical Raw Materials in Central Asia

Central Asia holds vast reserves of critical raw materials (CRMs) such as copper, antimony, titanium, molybdenum and other rare metals. As global demand for these commodities rises to support the green transition, the region could play an important role in future supply chains. Central Asian governments see CRMs as a new growth and diversification engine, not only in extraction but increasingly in processing and related value-chain activities, and have started adopting responsible business conduct (RBC) practices as well as legal frameworks to enhance environmental risk management. Yet investment has remained limited due in large part to outdated geological data, regulatory challenges, and the dominant role of state owned enterprises in mining. This report shows how Central Asian governments can make the sector more attractive to investors and ensure its development as a source of jobs and prosperity for their citizens by improving transparency, strengthening due diligence and labour rights, and increasing the participation of women and local communities in mining projects. It also offers options to better manage environmental risks and curb revenue losses linked to Base Erosion and Profit Shifting (BEPS) by large corporates. The report is aimed at policymakers, investors, and development partners seeking to support Central Asia's transition toward a more resilient, inclusive, and responsible mining sector.

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