

CHAPTER 9

Kumtor Gold Mine as a crucial aspect of the Kyrgyz economy – benefits, risks and perspectives

JULIA BADURA

JAGIELLONIAN UNIVERSITY
DEPARTMENT OF EURASIAN STUDIES
ORCID: 0009-0004-0411-9997

Abstract: Kumtor Gold Mine, located in north-western Kyrgyzstan at an altitude of over 4,000 metres above sea level, is one of the highest elevated gold deposits in the world. Since it began operating in 1997, the mine has become a key element of the national economy, accounting for a significant portion of the state's income and export of raw materials. Kumtor Gold Mine, one of the largest mineral deposits in Asia, plays a crucial role in Kyrgyzstan's economy, serving as a key source of revenue and exports. Its exploitation has significant environmental and social consequences. The mining process contributes to degradation of glaciers, pollution of water resources and generation of toxic waste, which has triggered resistance among local communities. Moreover, Kumtor Gold Mine operations were the main subject of numerous political tensions and its nationalisation in 2021 had a significant impact on the international relations and economic stability of the country. The aim of this study is to analyse the mine's multifaceted influence with a particular focus on environmental, social and economic aspects, as well as highlighting the necessity of implementing sustainable resource management strategies.

Keywords: Kyrgyzstan, Kumtor Gold Mine, resource management, environmental impact, resource curse, foreign investment, post-Soviet states.

INTRODUCTION

Modern conflicts are increasingly induced by conflicting interests in dividing natural resources. This is not just an economic issue, but also a social, environmental and political one. One such example of this multidimensional problem is Kumtor Gold Mine in Kyrgyzstan. Its history, which will be briefly outlined later in the argument, illustrates the difficult choices that developing countries must make between immediate economic gains, long-term environmental and social consequences. At the same time, it can illustrate how the exploitation of raw materials can affect an unstable political situation, fuel internal conflicts and lead to tensions in the international arena. The aim of this research study is to conduct a multi-level analysis of the impact of the Kumtor mine, considering environmental, social and economic aspects. The chapter also attempts to assess the effects of this type of exploitation on the stability of the state and indicates the need to implement sustainable strategies for managing abundant natural resources in the Issyk-Kul region of Kyrgyzstan. The focus of reflection is not only the direct effects of mining, but rather the broader institutional, political and geopolitical consequences that are related to the fact that they are in the hands of the state or foreign entities. The case study will be conducted through one that combines qualitative and documentary research, using available reports from international organisations, government documents, media reports and academic literature. The starting point is a reflection on the concept of the “resource curse”. The following sections of the article will present the historical background and geopolitical context of the Kumtor mine’s operation, as well as the main actors involved in the exploitation processes. Then, an in-depth analysis of the impact of the mine’s operations on the current political and social situation in the country and on the state of the natural environment will be conducted. The discussion section will address the broader implications of the Kumtor mine’s case for resource policy in unstable regions. The

chapter will end with a summary of the main findings and suggestions for further research directions.

THE SOCIO-ECONOMIC AND FINANCIAL FRAMEWORK

Kyrgyzstan, a post-Soviet Central Asian republic, has faced many political and economic challenges since gaining independence in 1991.¹ The country is relatively poor compared to its neighbours in spite of its wealth in natural resources² (Blank, 2008). Being rich in uranium, coal, iron ore, water resources and gold is the centre of the issue. Kyrgyzstan is a major gold producer in Central Asia, with an estimated annual production of 15–23 tonnes of gold, mainly from the Kumtor mine, which is estimated to have reserves of 288 tonnes of gold. 40% of Kyrgyzstan's export is gold, generating around 15% of the country's GDP, which adds up to \$120 million in total. The main recipients are Switzerland (67%), China and Hong Kong (23%) and the United Arab Emirates (2.5%) (Östensson et al., 2023). Although Kyrgyzstan has other mineral resources, gold is a key export commodity and a significant source of income for the economy. The best-known and most controversial mining operation in the country is the Kumtor mine, which is located at an altitude of 4,000 metres above sea level in the Tien Shan mountains and has been operating since 1997. Gold was discovered in 1978, but due to high costs, the development of the mine was delayed. It was only after Kyrgyzstan gained independence that the government was able to attract Western investors to

¹ According to the December 2024 Emerging Europe analysis, despite economic growth (around 7% in recent years, 8.1% in the first half of 2024), Kyrgyzstan's GDP per capita is still below \$2,000 per year, which is significantly lower than most of its neighbours, who have higher per capita incomes.

² According to a detailed review by EBSCO Research (2024), Kyrgyzstan has large hydropower resources (85.6% of electricity production), coal, oil, natural gas, uranium, gold, rare earth metals, and potential for renewable energy sources such as wind and solar energy, which are in the planning or early development stages.

begin developing its own mineral resources (Kumtor Gold Company, n.d.). Cameco Corporation was ultimately selected because of its favourable financial and technological capabilities. As one of the largest uranium producers in the world, the company also had extensive mining experience, with a growing involvement in gold mining. Technology and capital were also in its possession. Cameco agreed to utilise local labourers and transit companies (Fumagalli, 2015). Delving into details, the 1992 Master Agreement between the Kyrgyz government and Cameco Corporation included the right to exploit exclusive rights to evaluate and develop the project. The ownership structure: Kumtor Gold Company (KGC) was established. Cameco held 33% of the shares, with the rest, 67%, belonging to state-owned company Kyrgyzaltyn. Cameco agreed to build the mine infrastructure and manage the mining operations taking operational responsibilities. The agreement also included taxing laws, employment of Kyrgyz citizens, and the import and export of gold and other materials (Master Agreement, 1992).

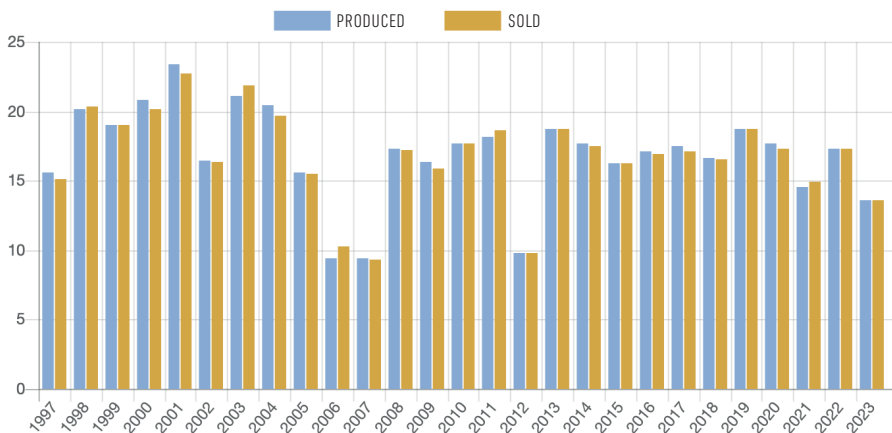


FIGURE 1 ANNUAL GOLD PRODUCTION IN KUMTOR GOLD MINE (IN TONNES)
SOURCE: KUMTOR GOLD COMPANY (N.D.).

The above graph shows the annual production (*произведено*) and sales (*реализовано*) of gold at the Kumtor mine in tonnes from 1997 to 2023.

Production increased from about 15 tonnes in 1997 to over 20 tonnes in 2000–2002. The highest level of production during this period was 23 tonnes in 2002. In the initial period of extraction, the richest layers of the deposit were exploited, which allowed for high extraction efficiency at low cost per unit (Centerra Gold Inc., 2004). In 1996, the plant reached full production capacity, allowing for stable and fast production growth (IMF, 1998). An additional factor was the rise of gold prices after they hit the bottom in 1999. The decline in production occurred shortly after the peak. The decrease in gold production was the result of the collapse of the excavation wall in mid-2002, which limited access to the deeper zones of the deposit (SEC Technical Report, 2004). After the richer layers of the deposit were exhausted, lower-value ore was extracted, resulting in a natural decline (Centerra Gold Inc., 2006). Another aspect is the increase in the stripping ratio – in order to gain access to new mining zones, it was necessary to remove more and more overburden – in 2006, the ratio of which reached 23:1 (Centerra Gold Inc., 2008). This was followed by a period of stabilisation.

Since 2009, production has increased and then stabilised at 15–18 tonnes per year until 2014, with a short-term decline in 2012 (approximately 10 tonnes). In 2019–2020, extraction approached 20 tonnes per year, reaching one of the highest levels of the mine's operation. In recent years, 2021–2023, extraction fell again – in 2023 it amounted to 14 tonnes. This was the result of mining ore with a lower gold content, with an average content of 2.74 g/t, compared to 3.51 g/t in 2022. At the same time, the gold recovery rate decreased from 80.42% to 78.56%, which directly translated into a decrease in extraction (Kumtor Gold Company, 2024). One reason for this was depletion of resources available through the open pit method. The company's reports indicate that underground mining and reclamation of waste material heaps are planned in the future (Kumtor Gold Company, n.d.).

Although the Kumtor mine was supposed to become a symbol of pro-development and economic hope for the country, attracting foreign investors and generating revenue for the budget, over time the project

became increasingly controversial, related to concessions, lack of financial transparency, inadequate compensation for local communities, and environmental and social consequences. The main actors involved in the Kumtor dispute are:

- The Government of Kyrgyzstan, which attempts to increase control over resources and improve the living conditions of citizens. Its actions are often motivated by social and political pressure
- Centerra Gold Inc., a Canadian company that has been the mine operator since its inception. It is committed to maintaining profits and minimising regulation
- Local communities and residents of mountainous regions, who are often employed in the mining sector, and who are most exposed to degradation of the environment, for example, the melting of glaciers that supply the population with water
- Environmental and non-governmental organisations, both local and international, which raised the alarm about the environmental situation, i.e., Bankwatch Network, which drew attention to, among others: “The destruction of glaciers has created massive waste mixed with ice, acids and heavy metals which estimated at two billion tonnes. After Canadians depart, melting masses will inevitably end up in Lake Issyk-Kul and the Naryn River” (GlacierHub, 2016)
- Geopolitical actors, such as Russia and China, for whom maintaining stability in the region is of strategic importance, and who are actively investing in Kyrgyzstan’s infrastructure and natural resources (Syrgek kyzy & Lee, 2025).

Currently, the Kumtor mine is in the hands of the Kyrgyz state, which took it over in 2021 on a wave of accusations against the Canadian company for environmental violations, and financial misconduct (Pikulicka-Wilczewska, 2021). The state currently manages the mine through a national company Kyrgyzaltyn JSC, but it has struggled with problems in terms of technology and little experience. Although the

above paragraph shows a short-term increase in budget revenues, concerns have arisen about future profitability, deterioration of relations with foreign companies and exacerbation of environmental threats. The situation of Kumtor is becoming an example of the global trend of increasing pressure on developing countries to balance the need for economic independence with maintaining investment attractiveness and environmental protection.

THE MULTIDIMENSIONAL BALANCE SHEET OF KUMTOR'S FUNCTIONING: GAINS, LOSSES AND SOCIAL TENSIONS

The Kumtor Gold Mine remains one of the key pillars of the Kyrgyz economy (Kumtor Gold Company, n.d.-a). In 2023, approximately 13,577 tonnes were extracted, which, although slightly below the planned 14 tonnes, still generated revenue of \$849 million – significantly above the planned \$734.2 million. Net profit reached \$302.4 million, exceeding previous forecasts (\$194 million) by more than 50%. The fiscal impact of the enterprise is also significant – 17.2 billion kyrgyz som (approx. \$193 million) was paid to the state budget in the form of taxes and other mandatory fees. Additionally, the mine is one of the largest employers in the country (Kumtor Gold Company CJSC, 2024). At the end of 2023, it employed a total of 4,623 people, including 3,417 full-time employees and 1,206 people under external contracts. Importantly, 99.9% of the staff were Kyrgyz citizens, which highlights the local nature of employment and limited dependence on foreign labour (Minex Forum, 2023). In terms of capital investments, the company allocated \$111.5 million in 2023 to modernise the mining infrastructure, including the purchase of 93 units of equipment and the implementation of gold extraction technology from low-grade ores (Kumtor Gold Company, 2025). In parallel, work was carried out on the development of the Togolok deposit, the estimated reserves of which exceed 17 tonnes of gold (The Times of Central

Asia, 2024). The company also strives to work for the local community and the environment. In 2023 alone, funds totalling nearly \$17.5 million were transferred to regional funds, including: \$8.4 million for the Issyk-Kul region, \$5 million for the Naryn region, \$1.6 million for the Development Partnership Fund and \$1.5 million for the Nature Development Fund (Kumtor Gold Company, 2024). The company is also involved in projects in the field of education, agriculture, environmental protection and humanitarian aid. Plans for the coming years include increasing production to 12.5 tonnes of gold in 2024 and starting to exploit the deposited resources, which may contain up to 120 tonnes of the precious metal (The Times of Central Asia, 2024). In the longer term, the development of underground mining is also planned, which is to enable the continuation of production activities while reducing environmental pressure. The mine is scheduled to end its operations in 2026 (Kumtor Gold Company, n.d.).

Despite the significant economic benefits of the mine, there are also many negative consequences, particularly for society and the natural environment. They can be divided into political and economic spheres, such as the decision to nationalise, lack of financial transparency and allegations of corruption, environmental effects and social tensions. From the initial stages of the mine's operation, tensions arose between the Kyrgyz government and the operator, Centerra Gold Inc. As mentioned earlier, the authorities repeatedly renegotiated the terms of the contracts, raising issues of the state's underestimated share of profits and insufficient environmental supervision. The conflict culminated in the decision to nationalise the mine in May 2021, motivated by the company's violation of environmental standards and financial regulations. The conflict's escalation was so intense that it led to reception of international arbitration, causing global repercussions and damage to the country's image as a stable investment destination (Bankwatch, 2016).

The exploitation of deposits at high altitudes is associated with a particular threat to glaciers and water resources, which are crucial for the region. Environmental organisations have been warning for years about the

deteriorating conditions of the glaciers. Approximately a billion tonnes of rock waste (in the period of time between 1994 and 2014) are being stored near them, causing accelerated melting and increasing deposition of dark dust on the ice, leading to higher heat absorption. This in turn affects the reduction of water resources feeding the Naryn River, which is important as it is a major source of drinking water and resources for irrigation of agricultural areas (Aliev et al., 2021). The Naryn River is also a key source of energy in the region through numerous hydroelectric power plants, such as Toktogul Hydroelectric Power Plant (Kyrzyzeno, 2020). The problem is evident in the aspect of surface and groundwater contamination. The mine employs a harmful method of gold extraction that generates waste containing cyanide and acids. This can lead to groundwater contamination and potential flooding of chemically contaminated waste by water from the melting Petrov Lake, which is growing due to the intensification of glacier melting.

Another problem is the accumulation of waste, which has grown to such an extent that it poses a threat to the stability of dams. There are also concerns about the leakage of waste into the Naryn River and subsequently into neighbouring countries, posing a cross-border threat. Environmental degradation inevitably impacts human health and well-being. Contaminated water increases the morbidity rate of kidney, liver and nervous system diseases among residents living in proximity of the mine.

The problems mentioned above led to numerous social protests that began after the ecological disaster in 1998. Initially, they were local and focused on demands for compensation, health and environmental protection. Over time, the activities of local NGOs such as Karek transformed into a social movement that, thanks to roadblocks and cooperation with national organisations – Tree of Life, Taza Tabiyat, Citizens Against Corruption, Human Rights Bureau and Kylum Shamy – gained nationwide significance. Around 2012, the protests were partially appropriated by political elites, especially the Ata-Jurt party, which included nationalisation slogans in its political campaign. The local narrative, focused on environmental justice, was replaced by a nationalist discourse of state

sovereignty (Horrocks-Taylor, 2018). The turning point in the history of the Kumtor mine was its nationalisation in May 2021. The Kyrgyz government, citing violations of environmental regulations, took control of the plant and established a temporary state administration. Officially, these actions were aimed at protecting the national interest, the natural environment and securing profits due to the state. This decision affected Centerra Gold Inc., which had previously managed the mine, and became the subject of international debate. On the one hand, Kyrgyzstan's actions can be interpreted as an attempt by a developing country to regain control over its natural resources. On the other hand, many observers point to a strong political and economic background, related, among other things, to the desire to increase budget revenues and consolidate power by the then state leadership (International Crisis Group, 2022). Although the allegations against the Canadian company were justified – Bankwatch Network reports confirmed serious environmental contamination – the manner and speed of the mine takeover raised suspicions. Accusations of violating international investment law appeared, and Centerra Gold Inc. took Kyrgyzstan to an arbitration tribunal in Stockholm. The state's actions were perceived as unilateral, and some experts assessed them as political revenge, rather than an expression of genuine concern for the environment (Kalyuzhnova & Pomfret, 2021). Moreover, nationalisation took place in the context of growing political tensions in the country – after the 2020 coup, the new president, Sadyr Dzhaparov, used slogans of regaining national wealth to legitimise his own rule. The nationalisation of Kumtor became an element of a populist campaign, and its motives were not transparently communicated (HRW, 2021). Although the intensity of the protests decreased after 2021, new criticisms of state governance emerged: lack of transparency, low participation of local communities in decision-making processes and insufficient benefits for the region. The conflict has not been resolved – it has only changed its form and actors. Nationalisation has not solved the fundamental problems – local communities still demand real influence and fair distribution of profits.

It should also be noted that despite the state's takeover of the mine, it lacks the necessary technological expertise and experience in managing mining projects. After a short-term increase in budget revenues, problems with operational efficiency, equipment maintenance and environmental management began to appear – as confirmed by internal audits of the state-owned company managing Kumtor (OECD, 2022). From a geopolitical standpoint, the takeover of the mine has weakened the trust of Western investors (World Bank, 2023) and at the same time brought Kyrgyzstan closer to China and Russia – two actors that have been investing in the region's infrastructure and resources for years (Gullette & Kalybekova, 2013). It can therefore be argued that the nationalisation of Kumtor not only failed to solve the environmental and economic problems but also deepened Kyrgyzstan's dependence on external powers and its isolation in the international arena.

KUMTOR AS AN ILLUSTRATION OF THE “RESOURCE CURSE”

The case of the Kumtor mine may illustrate typical features of the phenomenon known as “the resource curse”. Paradoxically, countries rich in natural resources struggle with serious economic, social and political problems. Theoretically, the presence of deposits should be the foundation for the stable development of the country. In practice, however, excessive dependence on exports combined with the lack of stable institutions leads to corruption, internal conflicts, nationalisation and stagnation (Sachs & Warner, 2001). Kyrgyzstan, despite being rich in mineral resources and extracting them to gain significant income for years, has neither been able to transform its natural potential into long-term development nor achieved social development or political stability. On the contrary, the situation around the mine has become the focal point of political disputes, a source of social tensions and a tool for populist narratives. For years, resource management in Kyrgyzstan has been dependent

on the interests of the ruling government (Yuldashev & Sahin, 2016). Successive governments have used the mine as a tool to legitimise their authority, promoting slogans about reclaiming national wealth or opposing Western corporations. In this context, the decision to nationalise Kumtor in 2021 was not merely a reaction to alleged environmental abuses, but also a manoeuvre designed to strengthen the position of the new government, which emerged after political turmoil and protests. Unfortunately, such actions – although popular in the short term – create enormous legal uncertainty and deter potential foreign investors. The lack of a stable institutional framework and the rule of law makes Kyrgyzstan a high-risk country. According to the OECD report (2022), foreign direct investment in the region has significantly declined since 2021, and the arbitration proceedings with Centerra Gold Inc. have further discouraged entities from cooperating with the Kyrgyz government. Kyrgyzstan lacked strong supervisory institutions, transparency, civic participation and a long-term development strategy. Revenue from gold mining was not effectively invested in infrastructure, education or diversification of the economy. Moreover, local communities, especially in mountainous regions, did not experience tangible benefits from the mine's operations – instead, they experienced side effects in the form of environmental pollution or limited access to clean water (Yusupova, Yugai, Choguldurov & Khubieva, 2024) Was nationalisation necessary? On the one hand, the government gained full control over the profitable economic sector, theoretically allowing it to secure the state interests. On the other hand, the way in which nationalisation was carried out – fast, not very transparent and without independent control mechanisms – only deepened the problems. There is a lack of appropriate know-how, technological support and transparent management. To avoid further deepening the resource curse, Kyrgyzstan should reform courts and audit bodies, increase transparency, social inclusion, sustainable development, and diversify the economy. By implementing these reforms, Kyrgyzstan can transform Kumtor from a symbol of problems into a symbol of reform and responsible management.

CONCLUSIONS

The case of the Kumtor mine in Kyrgyzstan is a clear example of the tension between the need for economic development and the risk of environmental, social and political destabilisation. On the one hand, gold mining brought undeniable budgetary profits, jobs and an influx of foreign investments to the state. On the other hand, the lack of transparency, international disputes and the final decision to nationalise revealed how easily conflicts and the erosion of trust occur, both domestically and internationally. An analysis of the experience of Kyrgyzstan allows us to formulate several conclusions. Natural resources alone do not guarantee development success; strong and transparent institutions are essential to ensure fair distribution of profits and the protection of the public interests. Secondly, nationalisation as a tool for regaining control over natural resources makes sense only when accompanied by responsible management and readiness for reforms. Otherwise, it risks deepening existing problems such as corruption and the marginalisation of civil society. In a broader context, the Kumtor case opens the door to further comparative research with other countries facing similar challenges. It would be interesting to compare Kyrgyzstan with Kazakhstan, which, despite similar conditions, has chosen a different path to control the mining sector. Countries such as Peru, where tensions surrounding mining are equally strong, could also provide valuable comparisons. This chapter contributes to the broader subject of the monograph that concerns understanding how natural resources not only shape economies but also influence political and social relations in developing countries. It also demonstrates that resource management is not merely a technical or economic issue, but above all a political and institutional one. In the absence of transparency and strong social oversight mechanisms, even the most promising projects can turn into a source of crises and long-term tensions.

BIBLIOGRAPHY

- Bankwatch Network (2016). *Mining company shirks blame for glacier damage in Kyrgyzstan*. GlacierHub. https://bankwatch.org/bw_in_media/mining-company-shirks-blame-for-glacier-damage-in-kyrgyzstan
- Blank, S. (2008). *Regional Rivalries Center on Kyrgyzstan*. The Central Asia-Caucasus Analyst. <https://www.cacianalyst.org/publications/analytical-articles/item/11550-analytical-articles-caci-analyst-2008-1-23-art-11550.html>
- Centerra Gold Inc. (2012). 2012 Annual Report. https://www.annualreports.com/HostedData/AnnualReportArchive/C/TSX_CG_2012.pdf
- Centerra Gold Inc. (2015). Technical Report on the Kumtor Mine, Kyrgyz Republic, NI 43-101 Report – Effective date December 31, 2014. https://www.kumtor.kg/wp-content/uploads/2015/04/centerra_kumtor_technical_report_final_march_20_2015.pdf
- Strathcona Mineral Services Limited (2004). Technical Report on the Kumtor Gold Mine, Kyrgyz Republic. https://www.kumtor.kg/wp-content/uploads/2015/04/centerra_kumtor_technical_report_final_march_20_2015.pdf
- Centerra Gold Inc. (2006). *2006 Annual Report*. Toronto, Canada: Centerra Gold Inc. https://www.annualreports.com/HostedData/AnnualReportArchive/C/TSX_CG_2006.pdf
- EBSCO (2024). *Kyrgyzstan's natural resources*. EBSCO. <https://www.ebsco.com/research-starters/environmental-sciences/kyrgyzstans-natural-resources>
- Farhod Y., & Bahadir, S. (2016). The political economy of mineral resource use: The case of Kyrgyzstan, “Resources Policy” 2016, vol. 49, pp. 266–272, <https://doi.org/10.1016/j.resourpol.2016.06.007>.
- Horrocks-Taylor, J. (2018). *Dirty water, muddied politics: Hybridisation of local and national opposition to Kumtor mine, Kyrgyzstan*. Land, 7(2), 42. <https://doi.org/10.3390/land7020042>
- Human Rights Watch (2019). *Kyrgyzstan: Freedom of expression and assembly under threat*. <https://www.hrw.org/world-report/2019/country-chapters/kyrgyzstan>
- International Arbitration Reporter (2021). *Centerra Gold launches arbitration against Kyrgyzstan following expropriation of Kumtor mine*. <https://www.iareporter.com>
- International Crisis Group (2021). *Stress-Tested Transition: Kyrgyzstan at a Political Crossroads*. <https://www.crisisgroup.org/europe-central-asia/central-asia/kyrgyzstan/stress-tested-transition-kyrgyzstan-political-crossroads>

- International Labour Office (2008). *Kyrgyzstan: Economic growth, employment and poverty reduction*. ILO. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@europe/@ro-geneva/@sro-moscow/documents/publication/wcms_306632.pdf
- Kudryavtseva, T. (2024). *Kumtor announces profit of \$302.4 million at year-end 2023*. 24.kg. https://24.kg/english/287665_Kumtor_announces_profit_of_3024_million_at_year-end_2023/
- Kumtor Gold Company (2025). The 2024 revenue of Kumtor Gold Company reached over USD 989 million. Kyrgyzaltyn Open Joint Stock Company, <https://www.kumtor.kg/en/kumtor-gold-kompaninin-2024-zhyldagy-zhalpy-kireshesi-989-mln-dollar-dan-ashty/>
- Kumtor Gold Company (n.d.). *History*. <https://www.kumtor.kg/en/deposit/history/>
- Kumtor Gold Company (n.d.). *Production figures*. <https://www.kumtor.kg/ru/deposit/production-figures/>
- Östensson, O., Alieva, A., Sydykova, A., & Treichel, H. (2023). *Mining Sector Diagnostic – Kyrgyz Republic*. World Bank. <https://documents1.worldbank.org/curated/en/099081623044079341/pdf/P17582903fc8890509e870f396f978774e.pdf>
- Pikulicka-Wilczewska, A. (2021). *Kyrgyzstan moves to nationalise gold mine run by Canadian company*. Al Jazeera. <https://www.aljazeera.com/news/2021/7/9/kyrgyzstan-moves-to-nationalise-gold-mine-run-by-canadian-company>
- Polish Human Rights and Business Platform (2023). How not to POL-ost: Human rights due diligence in the Polish garment industry [PDF].
- Sachs J. D., & Warner, A. M. (2001). The curse of natural resources, “European Economic Review” 2001, vol. 45(5), pp. 827–838, [https://doi.org/10.1016/S0014-2921\(01\)00125-8](https://doi.org/10.1016/S0014-2921(01)00125-8).
- Syrgak kyzy, N., & Lee, R. (2025, February 28). *The impact of Chinese investments on the gold mining sector in Kyrgyzstan*. Cambridge University Press.
- The Times of Central Asia (2024). *Kumtor Gold boosts Kyrgyzstan economy*. <https://timesca.com/kumtor-gold-boosts-kyrgyzstan-economy/>
- The Times of Central Asia (2024). Kumtor: Drop in gold production no cause for concern, <https://timesca.com/kumtor-drop-in-gold-production-no-cause-for-concern/>
- The Ukrainian Metal (2023). *Kyrgyzstan: number of Kumtor employees increases*. <https://metalukraine.com/2023/09/08/kyrgyzstan-number-of-kumtor-employees-increases.html>
- World Bank, Mining Sector Diagnostic – Kyrgyz Republic (2023). <https://www.worldbank.org/en/programs/egps/brief/mining-sector-diagnostic-msd>

- World Bank (2023). *Mining sector diagnostic – Kyrgyz Republic*. <https://documents1.worldbank.org/curated/en/099081623044079341/pdf/P17582903fc8890509e870f396f978774e.pdf>
- Yusupova, G. N., Yugai, N. A., Choguldurov, M. D., & Khubieva, S. A. (2024). Development of water resources infrastructure in the Kyrgyz Republic: Conflict potential. *BIO Web of Conferences*, 83, 04001. <https://doi.org/10.1051/bioconf/20248304001>