Economic and Geographical Problems in Interactions between Mongolia and Eastern Russia in Foreign Commodity Markets

L. A. Bezrukov^{a, *}, A. N. Fartyshev^{a, **}, and M. Altanbagana^{b, ***}

^a Sochava Institute of Geography, Siberian Branch, Russian Academy of Sciences, Irkutsk, 664033 Russia
 ^b Institute of Geography and Geoecology, Mongolian Academy of Sciences,
 Baruun selbiin 15, 4th Khoroo, Chingeltei duureg, Ulaanbaatar-51780, Mongolia

*e-mail: bezrukov@irigs.irk.ru

**e-mail: fartyshev.an@gmail.com

***e-mail: altanbagana@ndi.gov.mn

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Abstract—The high importance of exports of mineral raw materials for the economy of Mongolia and the weakening of its foreign trade interactions with Russia are revealed. It has been established that the value of Mongolian exports for a number of mineral raw materials exceeds Russian ones and has serious growth prospects. Using the example of coal and copper exports, the real prerequisites for the emergence of risks of competition between the exporters of Mongolia and the eastern regions of Russia for foreign markets of mineral raw materials in the near future are revealed. From an economic and geographical point of view, the strengths and weaknesses of the competitiveness of Mongolia and Russia in these markets are compared. The main disadvantage for Russia in comparison with Mongolia is its less advantageous transport and geographical position relative to the key Chinese sales market. The main ways to reduce the severity of competition between exporters of Mongolia and the eastern regions of Russia for external raw materials markets in the context of modern geopolitical challenges are proposed: a wide diversification of export deliveries of mineral raw materials to many countries around the world (primarily a reorientation to East, Southeast, and South Asia) and an increase in processing into semifinished products or finished products.

Keywords: export, mineral raw materials, foreign markets, competition, coal, copper

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INTRODUCTION

Anti-Russian sanctions were introduced in the spring of 2022 by the West with the goal of economically blockading and internationally isolating Russia from the Western world. To neutralize emerging threats, a large-scale reversal of foreign trade relations eastward is required. In this regard, the increase in throughput and modernization of the Trans-Siberian and BAM, the creation of international transport corridors, and the construction of new oil and gas pipelines to China and Far Eastern ports will be of great importance.

The urgency of intensifying international cooperation eastward necessitates identifying and solving problems that exist here. Serious economic and geographical problems of this kind manifest themselves in the sphere of Russian—Mongolian relations: due to the uniformity of natural resources and export specialization, Mongolia and eastern of Russian regions begin competing with each other in foreign markets. Meanwhile, due to the obvious underestimation of the potential of Mongolia in the Russian scientific and

business community, this has not yet been adequately understood.

In this regard, the main research issues include comparing the prospects for the export of Mongolian mineral raw materials with the corresponding opportunities of eastern Russian regions, clarifying the risks of competition for these goods in foreign markets, and reducing the severity of competition between Mongolian and Russian exporters in the face of modern geopolitical challenges.

PROSPECTS FOR THE EXPORT OF MINERAL RAW MATERIALS FROM MONGOLIA AND EASTERN RUSSIA

The resource and raw materials specialization of the eastern regions of Russia with the predominance of the share of extractive industries is well known. Mining has also emerged as a leading economic activity in Mongolia, increasing its share of industrial output from 35% in 1995 to 65% in 2017–2019. Therefore, mineral raw materials dominate in the commodity

structure of the country's exports: almost 90% in 2019, which determines the strong dependence of the Mongolian economy on its exports [1–3]. The vast majority of mineral raw materials exported by Mongolia are consumed by China: 100% iron ore, oil, copper, zinc and lead concentrate; over 98% coal; and 65–85% refined copper, fluorspar, and molybdenum concentrate [4]. As a result of a sharp reduction in Russian—Mongolian relations, the share of Mongolian exports to Russia in 2019 fell to 0.4% and the share of Mongolian imports from Russia to 28.2%. It should be noted that, over the past 10 years, the share of Siberia in the volume of Mongolian imports has decreased 3 times.

The development of the mining sector in the future will continue to determine the growth of the Mongolian economy. Even now, the value of Mongolian exports for a number of mineral raw materials exceeds Russian ones: for fluorspar 70 times, molybdenum ores and concentrates 50 times, and copper 8 times [4]. In terms of exports of fluorspar, Mongolia ranks 1st in the world, coal and tungsten concentrate 7th, copper concentrate 8th, and molybdenum concentrate 9th.

Possessing a significant mineral resource base, Mongolia extracts and exports on a large scale only a part of the types of raw materials. These primarily include hard coal and copper concentrate, the extraction and export of which have been growing rapidly in the last decade. This is due to the implementation of resource and raw materials projects such as the development of large deposits in the south of the country—coal (Tavan-Tolgoi and Nariin-Sukhait) and copper-gold (Oyu-Tolgoi). All of them are located 80-250 km from the border with China. Already in the coming years, with the completion of the construction of railways to these deposits, the volume of coal and copper exports by Mongolia to China should increase sharply. It is believed that its huge reserves of coal deposits allow Mongolia to increase coal exports to 75–95 million t by 2035 [5] and even up to 240 million t by 2040 [6]. Founded back in 1978, the Erdenet enterprise now produces 155000 t of copper per year, but continues to increase its capacity [7]. This volume will be more than three times higher than the production of copper at the new Ovu Tolgoi deposit, whose capacity may be 480 000 – 500 000 t [8].

The opportunities for increasing the export of coal and copper by the eastern regions of Russia look no less impressive. Thus, the largest coal-producing region, Kuzbass, exported 135.1 million t of coal in 2021 (about 63% of its total exports by the country), and a significant part of the supplies went eastward—about 60 million t [9]. Starting from 2023, 30 million t of coal will be supplied to the external market from the Elginskoye (Yakutia) deposit and up to 50 million t per year in the future [10]. There is a very high potential for increasing coal exports by new coal mining centers in the republics of Tyva and Yakutia, Zabaykalsky krai,

etc. [11, 12]. By 2024, it is planned to increase the throughput of the Trans-Siberian and BAM up to 180–195 million t, which will allow a sharp increase in coal exports from Siberia and the Far East through Pacific ports [13].

There are significant prospects for growth in copper exports. Since 2018, the industrial production of copper (capacity for copper 60000–70000 t) concentrate has been carried out at the Bystrinskoye deposit in Zabaykalsky krai [14]. In 2018, the development of one of the world's largest copper deposits, Udokan, began in Zabaykalsky krai, on the basis of which it is planned to produce about 540000 t of copper per year in the future [15]. Next in line is the development of the Ak-Sugskoye complex deposit in Tyva and the Kingashskoye copper—nickel deposit in the south of Krasnoyarsk krai as part of the Yenisei Siberia complex investment project [16].

THE PROBLEM OF RUSSIAN—MONGOLIAN COMPETITION IN FOREIGN COMMODITY MARKETS

Even a preliminary analysis of two types of mineral raw materials—coal and copper—has shown that there are real prerequisites for the emergence of risks of competition for foreign markets between exporters of Mongolia and eastern Russia. At the same time, the main competition will unfold in the world's most capacious Chinese market. Considering that the shares of Russia and Mongolia in China's total coal imports in 2021 amounted to only 18.6 and 11.0%, respectively, the potential for an increase in exports and further rivalry is very significant. In 2020, the shares of Russia and Mongolia were relatively small in China's total imports of copper products: according to our estimate [17], 4.2 and 2.2%, respectively. At the same time, the situation may change in the near future, since a common feature of all the above copper deposits in Mongolia and Russia is the orientation of supplies to the Chinese market.

Competition between Russian and Mongolian coal for the Chinese market has already begun in recent years. An analysis of the dynamics of coal exports to China shows that, until 2021, Indonesia and Australia played the main role in supplies, 72–76%, while Russia and Mongolia together accounted for 22-23% (Table 1). In 2021, China banned the import of Australian coal for political reasons [10]. A unique chance to occupy this niche in the Chinese coal market was taken advantage of to a greater extent by Russia and the United States (growth in export volumes in 2022 compared to 2021 by 16 and 13 million t, respectively) and, partly, by Canada, Indonesia, and Mongolia (growth in volumes in the range of 3-6 million t). At the same time, the resource potential of Russia turned out to be limited by the capacity of railways to the east. Mongolian coal supplies in 2020–2021 temporarily "dipped" due to quarantine measures introduced by China during

2018 2020 2021 **Exporting country** % % % mln t % mln t mln t mln t Indonesia 129 45.1 138 46.0 141 46.4 146 50.4 Australia 88 30.8 77 25.7 78 25.7 12 4.1 Russia 28 9.8 33 11.0 38 12.5 54 18.6 36 29 9.5 32 Mongolia 12.6 36 12.0 11.0 3 2.0 12 Canada 6 4.1 1.0 6 2.0 2 United States 0.7 4 1.3 1 0.3 14 4.9 Other 6 2.0 11 3.6 20 6.9 Total 286 100 300 100 304 100 290 100

Table 1. Dynamics of coal imports by China from the main exporting countries in 2018–2021

Notes: Compiled according to [18-20].

the exacerbation of the COVID-19 pandemic, which limited the import of coal from Mongolia by road. Although the total volume of Russian coal exports to China almost doubled from 2018 to 2021, competition with Mongolian coking coal nevertheless became tangible, the supply of which to the Chinese market led to a reduction in exports of Yakut coking coal there and its reorientation to markets other countries [21].

Let us compare the strengths and weaknesses of the competitiveness of Mongolia and Russia in the external commodity markets from an economic and geographical point of view. The negative factors of Mongolia's competitiveness include the insufficient development of the transport infrastructure necessary for the export of bulk cargo, an increased dependence on the most important market for mineral raw materials (China), and transit through its territory to nearby seaports [5, 22, 23], while Russia has its own main transport infrastructure with access to domestic ports (although there is both the congestion of railways and a shortage of port facilities to deal with). At the same time, new mining enterprises in Siberia and the Far East are located in more severe natural and climatic conditions than in Mongolia, which determines a higher payback threshold. Thus, the development of the Elga and Udokan deposits becomes more expensive due to the influence of complex terrain, permafrost, and low winter temperatures (for Udokan, also due to high seismic activity) [15].

The economic efficiency of the production and sale of large-tonnage mineral raw materials is largely determined by the transport and geographical position of the deposits relative to the sales markets. In a disadvantageous situation, the size of transportation costs for transportation is large, which are a key item of expenditure in the cost structure of mineral raw materials, reducing their price competitiveness. It is precisely in terms of the transport and geographical position that Russia is definitely losing to Mongolia, since it has a much longer and, accordingly, costly exit of mineral raw materials to foreign markets.

Considering the undesirability of the dependence on one trading partner due to the threat of lowering export prices, it is important to access the global market through seaports. For Mongolia, the distance from the Tavan Tolgoi coal deposits to the nearest Chinese port on the Yellow Sea, Tianjin, is less than 1500 km. At the same time, the distances for transporting Russian coal from Kuzbass to domestic Far Eastern seaports are 3.7–4 times longer—5500–6000 km. The difference in the distance of transportation of Russian copper from Udokan to the port of Vanino (2600 km) and Mongolian copper from Oyu-Tolgoya to Tianjin (1200 km) is also significant and amounts to 2.1 times. An additional limiting factor is currently the insufficient capacity of the railway lines (the Trans-Siberian and BAM) [24].

Mongolian hard coal and copper concentrate are almost completely exported to nearby regions of China, primarily to Inner Mongolia. Transportation distances are therefore relatively short: the transportation of coal from Tavan Tolgoi and copper from Oyuu Tolgoi to the nearest industrial centers—Baotou and Hohhot-is only 430-770 km, which provides huge economic advantages due to the minimization of transport costs. Meanwhile, due to unprecedented export distances. Russian coking coal has more than 30–40% of transportation costs in its price and energy costs of more than 50–60% [11, 12]. It is believed [25] that, at least in the Chinese market, the price competitiveness of Mongolian coal will be much higher than that of Russian coal. A similar situation is possible for other types of mineral raw materials.

WEAKENING OF RUSSIAN–MONGOLIAN COMPETITION ON EXTERNAL COMMODITY MARKETS IN THE FACE OF GEOPOLITICAL CHALLENGES

In the context of modern geopolitical challenges, Russia's foreign trade and transport and logistics priorities are radically changing. The unprecedented sanctions of the collective West lead to a significant reduction or termination of economic ties with "unfriendly" countries, the list of which, in addition to most European countries, includes the United States,

Canada, Australia, Japan, the Republic of Korea, and Taiwan [26]. To neutralize or mitigate emerging threats, it is necessary to turn to foreign trade relations through Far Eastern ports and land crossings with China, Mongolia, and Kazakhstan, which will ensure safer and more reliable interactions with partners in the non-Western world, primarily with countries of East, Southeast, and South Asia.

At the same time, measures should be taken in advance to mitigate the risks of competition between Mongolian and Russian (Siberian-Far Eastern) raw materials in foreign markets for raw materials, especially in the Chinese market. Russian exporters should take into account that Mongolia, due to its inland geographic location, is tightly tied to the Chinese market. At the same time, for example, the transit of Mongolian coal through Russia to Far Eastern seaports is hampered by the insufficient capacity of railways and competition with Russian coal mining companies that control terminals in ports. The transit of Mongolian coal through China to its ports is complicated by the interest of Chinese entrepreneurs to buy fuel at low prices immediately on the Mongolian-Chinese border [21].

The main ways to ensure an unhindered and profitable entry of Russian mineral raw materials to foreign markets should be considered: first, the wide diversification of their supplies to non-Western countries with the development of new sales markets and, second, an increase in the depth of processing mineral raw materials into semifinished products or finished products with a high added value. The scale of the required reorientation of export flows of raw materials is large. Thus, since August 2022, the EU has imposed an embargo on Russian coal which affects up to 50 million t of its export supplies [24]. There are risks of losing even more significant volumes of coal exports almost 55 million t—from major East Asian importers such as Japan, the Republic of Korea, and Taiwan (Japan has already begun reducing purchases) [24].

In total, "unfriendly" countries accounted for about 118 million t of Russian coal exports in 2021, a significant part of which can be redirected to promising Asian markets. In particular, according to an agreement between Russia and China, in the next 3–5 years, the export of Russian coal there can grow up to 100 million t [27]. The total coal import of only three countries in South and Southeast Asia—India, Vietnam, and Malaysia—reaches 307 million t, which is 2.6 times higher than the volume of Russian coal exports to "unfriendly" countries. The degree of presence of Russian coal in the markets of these three countries is still very small—only 3–9%. However, two complicating factors must be pointed out.

The first has already been mentioned: the same infrastructural transport and logistics restrictions. Despite work to expand the capacity of the railways, their capacities in the direction of Far Eastern ports lag

behind what is required. Therefore, even now some coal is exported to East, Southeast and South Asia through Baltic and Black Sea ports. In value terms, this means that, when coal is shipped from the Far Eastern ports of Russia to China, the average freight rate is \$3.4/t and, to India, \$6.2/t, while, when shipped from the Black Sea ports to China, the freight rate grows to \$23.9/t and, to India, up to \$20.4 USD/t, i.e., 7 and 3.3 times, respectively [10]. This excessive shipping distance significantly reduces the price competitiveness of Russian coal in Asian markets.

In part, the problem of increasing coal supplies through Far Eastern ports can be solved thanks to the construction of a 500-km-long railway from the Elga deposit to a new port on the coast of the Sea of Okhotsk near the village of Chumikan, which will mean Russia's third access to the Pacific Ocean [24]. At the same time, certain doubts are raised, of course, by the short deadlines for commissioning (2025) of the road and the port that have been announced.

Another hampering factor is increased competition in the Chinese market from Mongolian coal. The high price competitiveness of Tavan Tolgoya coal is evidenced by the fact that its supply prices are 2–3 times lower than global prices due to its favorable transport and geographic location [25]. Soon after the coal deposits of Mongolia join the railway network of China, the possibilities of exporting its coal will increase even more.

The second main way for Russian mineral raw materials to enter foreign markets is to increase the depth of processing mineral raw materials into semi-finished products or finished products with a high added value. For example, in 2019, the average export price of Mongolian copper concentrate was \$1280/t, while the price of cathode copper (semi-finished product) was \$5770/t, i.e., 4.5 times more. With an increase in the depth of processing of raw materials, transportation costs account for a much smaller part of the final cost of goods that become more transportable, as a result of which profitable transportation distances increase many times and the size of sales markets expand.

The reserves for reducing transport costs, depending on the depth of processing of raw materials, are truly enormous. Therefore, according to our calculations [28], in the first half of the 2000s, the share of transport costs in Russia in the final prices of raw materials reached 70–80%, while in the prices of semifinished products it was 10–30% and in the prices of finished products it did not exceed 2–5%. The central direction of the modernization of the Siberian industry lies precisely in the deepening of the processing of raw materials on the spot by forming the upper "floors" of many basic industries. Mongolia should move along the same path, which will make it possible to eliminate the rigid attachment of the export of its bulk raw materials to the nearby regions of China and

reduce the severity of competition with Russia in the Chinese commodity market.

We will show the possibilities of overcoming the dependence on the Chinese sales market and entering the markets of more remote Asian countries using a hypothetical example of increasing the depth of processing of copper raw materials. One common feature of all new copper deposits in the east of Russia is the orientation of supplies to the Chinese market. However, it is increasing its own smelting of copper and therefore shows demand primarily not for finished metal, but for copper concentrate. Therefore, trade with those countries that import mainly copper and products from it, rather than ores and concentrates, is more promising. Thus, the significant market capacity (total import of copper is 1400000 t) of only four countries in South and Southeast Asia—India, Thailand, Vietnam, and Malaysia—allows one to accept the entire volume of refined copper, which can be obtained as a result from new deposits of Eastern Siberia and Mongolia (1300000 t). At the same time, it is clear that taking advantage of this opportunity will require large-scale investments in the construction of metallurgical plants for processing copper concentrate.

CONCLUSIONS

In the context of large-scale anti-Russian sanctions implemented by the West and the reversal of Russia's foreign trade relations to the East, it is necessary to identify and solve the problems that exist here, including the emergence of risks of competition between exporters in Mongolia and the eastern regions of Russia for foreign markets of mineral raw materials, primarily for coal and copper. Both countries have a very significant potential for increasing exports, with a clear orientation of supplies to the Chinese market. Meanwhile, in relation to this market, the transport and geographical position of coal and copper deposits in the eastern regions of Russia is significantly less favorable in comparison with the corresponding position of deposits in Mongolia, which determines the best price competitiveness of Mongolian mineral raw materials.

The main ways to ensure the profitable entry of Russian mineral raw materials to foreign markets (taking into account the need to reduce the risks of competition with similar Mongolian goods and overcome the rigid dependence on the Chinese market) should be considered: first, the wide diversification of their supplies to many countries in Eastern, Southeast, and South Asia and, second, the increase in the depth of processing of mineral raw materials into semifinished products or finished products. The implementation of these routes is, of course, associated with significant investments: to reorient export flows, it is necessary to expand the capacity of the Trans-Siberian Railway, BAM, and port facilities on the Pacific coast, as well as build new railway access; to increase the depth of

processing of raw materials, it is necessary to build metallurgical plants.

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