Mongolian and Russian Coals On the International Market – Is the Competition Real?

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Abstract — **The coal industries in Russia and Mongolia tend to increase coal supplies for export. The competition between Russian and Mongolian coal so far concerns only the Chinese coal market. In the future, however, there can be competition in the international coal market of the countries in the Asia-Pacific Region (APAC). Mongolia exports mainly premium (coking) coal. Russia exports coking and steam coal, with a predominance of steam coal. An analysis of the factors influencing the development of Mongolian and Russian coal export to the APAC countries indicates that the increase in export supplies is limited mainly by the capabilities of the transport infrastructure and geopolitical conditions. Mongolia has additional restrictions due to its geographical position, since the country does not have access to sea trade routes, which creates the need for cooperation with Russia and China to enable access to the sea coast. The Russian coal industry depends on the coal supply for export to a lesser extent than the Mongolian coal industry. At present, almost all Mongolian coal exports go to China, while the share of exports to China in the volume of Russian coal exports to the Asia-Pacific countries is no more than 30%. An analysis of the development indices for the coal industry in Mongolia and Russian regions exporting coal to the Asia-Pacific countries has not shown a significant influence of the Mongolian factor on the volume of Russian coal exports.**

Index Terms: **production, Mongolia, Russian regions, coal, coal industry, export.**

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I. Introduction

Trends in the development of the coal industry in Mongolia and Russian regions that supply coal to the Asia-Pacific market are associated with an increase in the export coal supplies [1, 2]. Only Australia and Indonesia are ahead of Russia in terms of coal export volumes. Since 2016, Mongolia has become one of the top ten coal exporters [3] competing with Russia, Australia and Indonesia in the Asia-Pacific coal market [1]. Analysis of the retrospective development of export supplies of Russian and Mongolian coal and the factors affecting the export of these coals to the Asia-Pacific countries answers the question of how significant such competition is. Russian coal is exported to the Asia-Pacific countries including China, Japan and South Korea, which are the largest coal importers, and to other countries in the region. Mongolia exports coal mainly to China. Coal from the Far Eastern and Siberian federal districts of Russia is exported to the Asia-Pacific countries. In the future, Mongolia can compete with Russia on the Asia-Pacific market. The most important components of such competition are the availability of balance reserves of coal suitable for export, the possibility of boosting coal production and the possibility of increasing supplies to a wide international market. The course towards the decarbonization of the economy taken by many countries of the world, including the countries importing Russian and Mongolian coal, has become an important direction in recent years [4]. Geopolitical conditions also have a significant impact on the export of Russian coal.

Given the available big coal reserves of export quality in Mongolia and Russia, the study on the prospects for the development of coal export and factors affecting the export volumes and directions, in terms of competition, is relevant.

II. Russia and Mongolia on the International Coal Market of the APAC Countries

Currently, competition between Mongolian and Russian coal exists only on the Chinese market. The main competitors to Russian and Mongolian coal on the Chinese coal market are Australia and Indonesia (Table 1).

Table 1. Characteristics of the main coal importers on China's coal market

Exporting country	Share of exporting countries in coal import to China, %*			Coal reserves-to-production ratio, years	Export volume in 2020, EJ		Share of coal exports to China in 2020, %*
	2018	2019	2020		Total	including to China	
Russia	11.7	12.8	15.1	407	5.66	1.00	17.7%
Mongolia	15.9	16.0	11.9	58	0.79	0.79	100%
Australia	35.4	32.3	31.8	315	9.25	2.10	22.7%
Indonesia	31.3	34.2	35.4	62	8.51	2.34	27.5%
Other	6	5	6				

Source: [1],
Note: * Calculated based on the data [3, 5, 6]

Table 2. Characteristics of the coal industry in Mongolia and Russian regions supplying coal to the Asia-Pacific countries, million tons

Index	Year					
	2015	2016	2017	2018	2019	2020
Mongolia						
Mining	24.2	35.5	48.1	51.4	55.8	43.8
Processing	2.6	3.0	8.0	9.1	9.0	8.5
Supplies	23.8	35.7	46.0	51.0	51.8	42.8
Export	13.3	24.1	29.0	32.0	32.3	25.2
Share of export supplies	56%	68%	63%	63%	62%	59%
Regions of Russia (Western Siberia and the Far East)						
Mining	352.5	371.2	395.1	425.3	426.9	385.7
Processing	155.7	165.8	182.3	187.8	197.1	193.0
Supplies, of which	310.6	319.7	344.5	364.1	362.9	348.9
Export supplies, including	149.4	160.5	183.9	190.1	190.3	192.8
Export supplies to Asia-Pacific countries, of which	55.0	63.3	72.9	72.8	77.0	85.6
to China	11.8	15.2	21.0	21.4	23.1	25.3
Share of export supplies, total	48%	50%	53%	52%	52%	55%
to Asia-Pacific countries in total exports	37%	39%	40%	38%	40%	44%
to China in exports to Asia-Pacific countries	21%	24%	29%	29%	30%	30%
to China in total exports	8%	9%	11%	11%	12%	13%

Source: [1, 2] and author's calculations based on the data [1, 2]

According to international statistics [3], Mongolia's coal accounts for 1.24% of the world's reserves, which corresponds to the 24th place of the country in terms of reserves. Russian coal reserves account for 15.10% of the world's reserves and are second only to those of the United States. Mongolian coal is in demand on the world coal market because of their high quality. The share of Mongolian high-quality coal (anthracite and bituminous, mainly coking) in the world proven coal reserves is 0.16%, which corresponds to the 15th place in terms of high-quality coal reserves. The reserves of Russian high-quality coal account for 9.52% of the world's reserves, following only those of the USA, China, India, and Australia. The extent to which the coal reserves of Mongolia are investigated is low. With an increase in the exploration work, Mongolia's position in terms of coal reserves can significantly improve.

In terms of available coal reserves, Russia leads among the countries exporting coal to China. The availability of coal reserves is calculated as the reserves-to-production ratio according to 2020 data [1]. According to the official data of Mongolian statistics [7], the proven coal reserves of Mongolia are significantly higher than those presented in international statistics. Comparing Russian and international data on Russian proven coal reserves, one can assume that international statistics take into account only reserves of categories A + B + C1, while the Mongolian statistics indicates the reserves of categories A + B + C1 + C2. According to international statistics, Mongolian proven coal reserves are 2.52 billion tons. According to Mongolian statistics, the total proven geological reserves of coal in Mongolia are 32.6 billion tons, and the reserves that can be further explored are 150 billion tons. This indicates that coal reserves-to-production ratio of Mongolia can be more than 58 years.

Russian coal is exported to the APAC countries from Western Siberia and the eastern regions of Russia (the Far East and Eastern Siberia). The rise in coal production in these regions of Russia and in Mongolia is due to the growth of coal exports (Table 2). Table 2 presents data from the official site of Mongolian statistics [3], according to which the share of export supplies ranges from 56 to 68%. According to another official source [8, 9], the share of exports in coal sales ranges from 65 to 80%. This indicates the dependence of the coal industry development

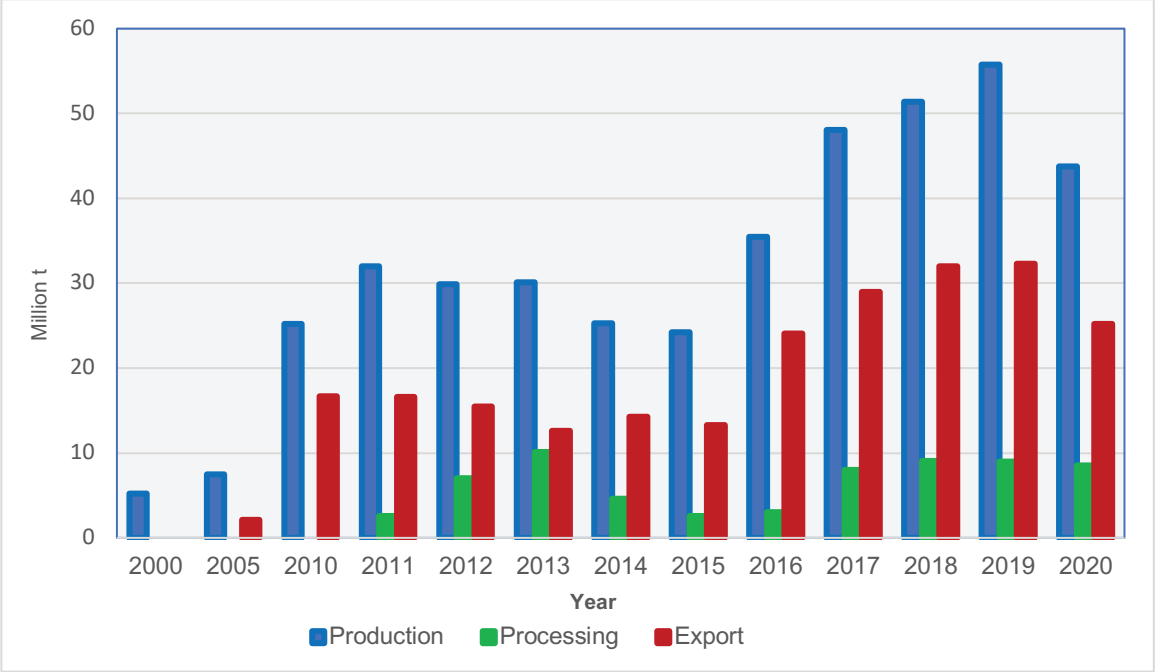

Fig. 1. Development indices of the Mongolian coal industry. Source: [2] Mongolian Statistical Information Service www.1212.mn

Table 3. Mongolian coal trade movements, million tons

Index	Year		
	2018	2019	2020
Supplies	45,7	47,0	41,0
Domestic market, brown coal	9,1	10,2	9,8
Exports, including:	36,7	36,8	31,2
Coking coal concentrate	5,5	6,8	5,0
Raw coking coal	26,1	25,5	23,6
Steam coal	5,1	4,5	2,6
Share of steam coal in exports	14%	12%	8%
Share of coking coal concentrate in exports	15%	18%	16%

Source: [8, 11, 12]

in Mongolia on coal exports.

The Russian coal export depends on export to the Asia-Pacific countries (in particular, on export to China) to a lesser extent than that of Mongolian coal. The share of coal exports to the Asia-Pacific countries in the period at issue ranged from 37 to 44% of the total exports and the share of coal exports to China was of 8 to 13% of the total exports. In recent years, there has been an upward trend in the share of coal exports from Russia to the Asia-Pacific countries. The share of China in the Russian coal export to the Asia-Pacific countries is not dominant and in retrospect, it ranged from 21 to 30%.

Comparison of coal processing and export volumes shows that Mongolia supplies mainly run-of-mine coal, while Russia exports washed coal. This is an undoubted advantage of Mongolian coal over Russian one.

III. Coal Export From Mongolia

The export of goods, including mineral resources, is of great importance for the economy of Mongolia [2, 7]. In recent years, the export of coal has developed at the fastest pace and has surpassed the export of other mineral resources. The significant resources of high-quality coal available [2, 9] and the growing demand for Mongolian coal in the international market creates the prospects for increasing coal exports from Mongolia [10].

From 2005 to 2019, coal production in Mongolia increased more than 7 times from up to 7.5 million tons to 55.8 million tons, while coal exports rose more than 16 times from 2.1 million tons to 32 .3 million tons (Fig. 1). The main increase in production is due to the growth in demand for export supplies. In 2020, production and export volumes decreased, but this year is not indicative due to pandemic-related supply restrictions.

The analysis of coal supplies (Table 3) shows the dominant role of export supplies, which makes the development of the Mongolian coal industry dependent on the demand for coal on the international market, limited

Table 4. Quality characteristics of coal suitable for export

	Type of coal	Total moisture	Ash content	Volatiles	Sulfur	Calorific value
		TM	Adb	Vdaf	St,db	Qnet,ar
		%				Kcal/kg
al	Coking	2.1–4.6	12.6–18.6	26.9–28.0	0.67–0.98	6 755–7 256
	Coking (low-caking)	2.6–4.3	7.2–17.2	30.6–42.0	0.77–1.22	6 158–7 200
	Steam	3.2–5.3	15.4–22.0	28.6–45.4	0.88–1.19	5 598–5 963
l	Coking	9.0	9.1	25.6	0.66	6 809

Table 5. Indices of the development of coal deposits in Mongolia, million tons

Index	Year					
	2015	2016	2017	2018	2019	2020
Overburden volume, million m^3	93.0	102.4	197.2	244.9	292.2	209.4
Stripping ratio, m^3/t	3.9	2.9	4.0	4.5	5.1	4.9

Source: [8, 9]

Table 6. Development indices for the coal industry in Western Siberia, million tons

Index	Year						2020–2015
	2015	2016	2017	2018	2019	2020	
Production	221.3	234.3	252.3	270.1	264.9	232.1	10.8
Processing	116.0	124.2	134.9	140.4	148.1	142.9	26.9
Deliveries	190.8	198.4	215.7	226.2	221.2	210.4	19.6
Exports, including	118.6	126.3	145.5	148.1	143.1	139.4	20.8
to APAC countries, of which	29.4	35.1	41.1	40.3	37.0	41.2	11.8
to China	6.8	7.2	9.8	12.1	11.7	11.3	4.5
coking coal exports to APAC countries, of which	7.2	5.0	5.3	5.0	4.5	6.0	–1.2
coking coal exports to China	2.1	0.3	0.1	0.3	0.8	0.9	–1.2
Share of exports							
in supplies, total	62%	64%	67%	65%	65%	66%	0.04
to APAC countries of export volume	25%	28%	28%	27%	26%	30%	0.05
to China of export volume to APAC countries	23%	21%	24%	30%	32%	27%	0.04

Source: [2, 3] and author's calculation based on the data [2, 3]

Table 7. The development indices for the coal industry in the eastern regions of Russia, million tons

Index	Year						2020–2015
	2015	2016	2017	2018	2019	2020	
Production	131.2	136.9	142.8	155.2	162	153.6	22.4
Processing	39.7	41.6	47.4	47.4	49	50.1	10.4
Supplies	119.8	121.3	128.8	137.9	141.7	138.5	18.7
Exports, of which	30.8	34.2	38.4	42	47.2	53.4	22.6
to APAC countries	25.6	28.3	31.7	32.4	40.0	44.4	18.8
to China	5	8	11.2	9.3	11.4	14	9
coking coal to APAC countries	3.5	4.2	4.6	4.4	5.1	4.7	1.2
coking coal to China	2.5	4.0	3.1	1.0	1.3	2.0	-0.5
Share of export supplies in deliveries, total	26%	28%	30%	30%	33%	39%	13%
to APAC countries in export volumes	83%	83%	83%	77%	85%	83%	0.0%
to China in export volumes to APAC countries	20%	28%	35%	29%	29%	32%	12%

Source: [1] and author's calculations based on the data [1]

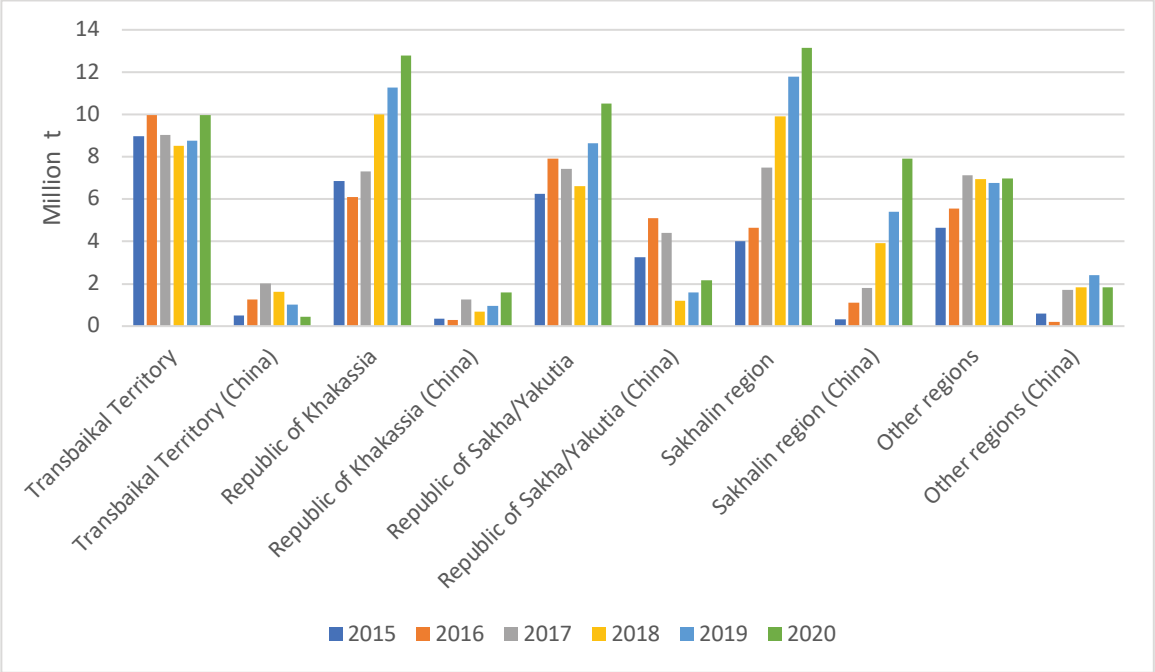

Fig. 2. Coal exports to the APAC countries. Source: [1]

Table 8. Share of exports to China in the exports from the eastern regions of Russia

Region	Year					
	2015	2016	2017	2018	2019	2020
Exports, total	16%	23%	29%	22%	24%	26%
Transbaikal Territory	5%	13%	23%	19%	12%	4%
Republic of Khakassia	5%	5%	17%	7%	8%	13%
Republic of Sakha (Yakutia)	52%	65%	59%	18%	18%	21%
Sakhalin region	8%	24%	24%	40%	46%	60%
Other regions	13%	4%	24%	26%	36%	26%

Source: Calculated using the data [1]

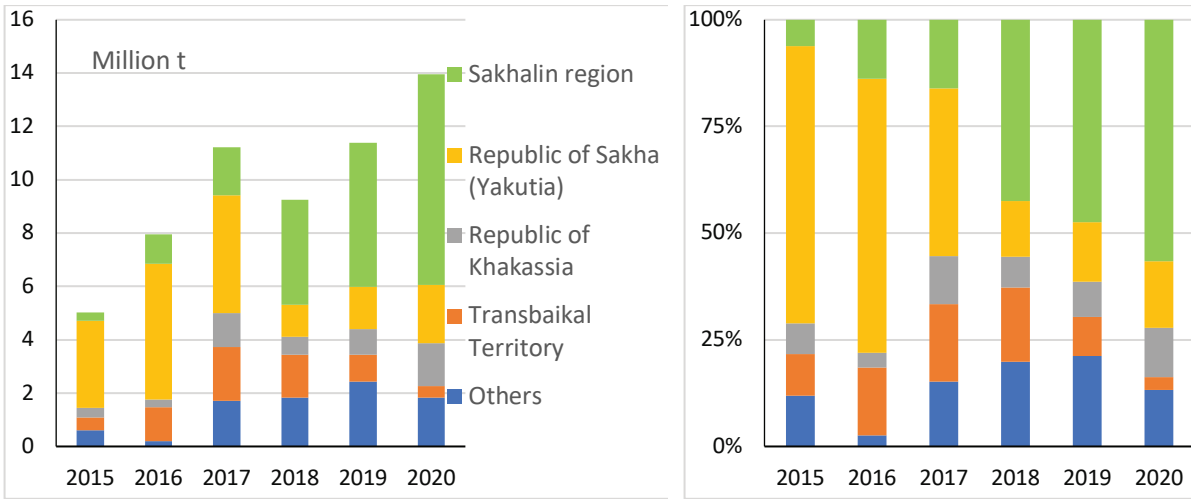

Fig. 3. Coal exports to China from the eastern regions of Russia: a) in physical terms; b) shares of regions in total exports to China. Source: [1] and the author's calculations based on the data [1]

only by China.

Only lignite (brown coal) is supplied to domestic market [7–9]. Exports consist of almost 90% of coking coal, of which only about 15% is coking coal concentrate, the rest is ordinary coking coal, i.e., coal that has not been processed at the washing plant. The quality indices of Mongolian coal correspond to the premium class and allow it to be supplied to the international market in an unprocessed form (Table 4).

Projects for expanding the capacities of existing enterprises and building new ones focus on the increase in coal exports. To increase export supplies, projects for the development of coking coal production are considered [13]. The most significant of them are the development of the Tavan Tolgoi deposit in the south of Mongolia and Shivee-Ovoo deposit in the northeast. The total volume of coal production in general for these projects can be more than 90 million tons per year, including up to 62.5–67.5 million tons per year in the southern regions of Mongolia [14].

Mining and geological conditions are favorable. The coal deposits in Mongolia are developed by an open method. To assess the feasibility of open pit coal mining, the stripping ratio is used. The stripping ratio is the ratio of the amount of waste rock to the amount of minerals. For the coal industry, the limiting (or the maximum allowable in terms of economic feasibility of mining) stripping ratio is 15–20 m3/t. The dynamics of changes in the stripping ratio (Table 5) show a slight, but quite acceptable, deterioration in the development conditions for the coal deposits.

Difficulties in the development of promising deposits are associated with the need to create social and transport infrastructure, including energy infrastructure and water supply. The shortage of water resources is typical of many areas in Mongolia, especially those of the deposits located in the Gobi desert.

IV. Export of Russian Coal to APAC Countries

Russian coal from Western Siberia (Table 6) and the eastern regions of Russia (Far East and Eastern Siberia) is exported to the Asia-Pacific countries (Table 7). There is a stable upward trend in export deliveries, especially for the eastern regions.

The share of export supplies from Western Siberia is more than 60%, which makes the coal industry of Western Siberia dependent on them. At the same time, in 2020, only 30% of export volumes go to the eastern direction, where competition with Mongolian coal is possible. With stable growth in coal export from Western Siberia, including that to the Asia-Pacific countries and to China in particular, coking coal deliveries to China decreased. Thus, Mongolian coking coal squeezed out coking coal from Western Siberia from the Chinese market, which did not affect the trend of increasing coal export to the Asia-Pacific countries. The growth in supplies to the Asia-Pacific countries from 2015 to 2020 amounted to 11.5 million tons, including 4.5 million tons to China.

Coal from the eastern regions is mainly exported to the APAC countries, and in small volumes to other countries. In 2015-2020, the eastern regions, as well as Western Siberia, increased export deliveries, and their share in total deliveries rose from 26% to 39%. Almost all coal-mining eastern regions export coal to the Asia-Pacific countries, including China (Fig. 2). With a significant increase in exports from the eastern regions in 2015-2020, export to China more than doubled, and its share in export volumes rose from 16% to 26%.

The Sakhalin Region provided the largest increase in coal exports to the Asia-Pacific countries, including those to China. In 2020, the share of coal supplies to China in export deliveries to the APAC countries from the Sakhalin region was 60%, while this share in export deliveries from other regions ranged from 4% to 26% (Table 8). Other regions include the Republic of Tyva, Irkutsk Region, Primorsky Territory, Khabarovsk Territory, and Chukotka Autonomous Area. The coal of the eastern regions competes on the Chinese market only with coking coal from Mongolia. Coking coal was supplied from the Republic of Sakha (Yakutia). The reduction in the coking coal supplies to China did not affect the total coal export from Yakutia (Fig. 2). The export of steam coal to China decreased only for the Transbaikal Territory, which also did not affect the total export volumes.

The total volume of exports to China increased, mainly due to the steam coal supplies from the Sakhalin Region (Fig. 3).

V. Factors Affecting Export Supplies of Mongolian Coal

The main factors hindering the increase in the export of Mongolian coal are the state of Mongolia's transport infrastructure and continental geographical position of the country with no access to sea trade routes [15].

Access to the international market can only be ensured by transit to seaports through the territory of China or Russia. Potential transportation corridors, including those to the border through the territory of Mongolia and further to sea coal terminals through the territory of Russia, are of 3213 km to 5300 km long, and on the territory of China – of 1622 km to 2633 km [10]. Thus, the possibility for Mongolia to enter an international market depends on the ability to conclude mutually beneficial agreements with Russia and China on the terms of coal transit, which also involves the availability of sufficient transit and throughput railway capacity, and the capacity of sea coal terminals.

Significant restrictions on domestic transport infrastructure also hinder the coal export from Mongolia. Coal is transported across the territory of Mongolia to border crossings mainly by road.

The internal transportation infrastructure of Mongolia significantly limits the possibilities of transporting other goods either. The main transportation artery of Mongolia is

the Ulaanbaatar Railway (UBR), which provides domestic and transit transportation. UBR needs to be reconstructed and cannot fully meet the demand for cargo transportation [15]. The operational length of Mongolian railways is a little over 2215 km. The throughput capacity of UBR is 14 pairs of trains per day, and the carrying capacity is 25 million tons per year, while the plan is - 50 million tons. UBR consists mainly of single-track sections (76 sections), with a predominance of diesel traction. A Russian-Mongolian project for the creation of a new railway infrastructure and the expansion of the JSC "UBR" has been developed and is being implemented. The project involves the modernization of the existing network of the JSC "UBR" and the construction of new railway lines.

The most promising deposits of coal suitable for export are located in the south of Mongolia. Coal mines and border crossings on the border with China are connected by paved roads of 45 to 310 km in length.

A plan was developed to construct railway lines connecting coal deposits with border crossings, and/or UBR. The total length of the lines is 2.2 thousand km [8], including 8 lines with a length of 13 to 770 km. The lines of the highest priority are those connecting the Tavan Tolgoi deposit and the UBR (458 km) and the Tavan Tolgoi deposit and the Gashuun Sukhait border crossing on the border with China (267 km). The construction of the line to the UBR will enable coal transportation both to the Russian border and to China. Currently, new railway lines are under construction, the lines of top priority will be built first.

The transit transportations through the territories of Russia and China to seaports require appropriate agreements to be concluded if there are conditions for such transportations. According to the research [14], the transportation costs for the countries that do not have access to maritime trade routes are about 50% higher than for those with access to the sea [16].

In addition, there are restrictions on the throughput and carrying capacity of both Russian and Chinese railways, where priority is given to the domestic cargo. The capacity of coal terminals in China is several times higher than the capacity of coal terminals in Russia [16]. Although China has several coal terminals, Mongolia has authorized access only to one, Tianjin terminal. Some agreements with Russia on the use of the Russian transport infrastructure for the Mongolian coal delivery to the international market were also reached [17].

Despite the agreements reached, coal exports from Mongolia have so far been shipped only to China. According to the data of 2021, coal production in Mongolia decreased to 26.7 million tons, and exports went down to 15.9 million tons [18].

From the perspective of logistics, the coal transportation to the Asia-Pacific markets through China is the most feasible. The only question is whether the carrying and handling capacity of China's railways allows transporting Mongolian coal and how profitable it is for China.

The option of transporting coal through Russian territory also has its limitations and not only because of the limited capacity of the Eastern Polygon railway, which does not allow even Russian coal mining companies to transport the demanded volumes of coal. Coal terminals in the east of Russia are largely controlled by coal companies that supply coal to the Asia-Pacific countries, and the total capacity of the terminals is almost 7 times less than the capacity of Chinese terminals [19].

VI. Factors Affecting the Russian Coal Supplies to the APAC Market

Eastern regions of Russia and Western Siberia have sufficient capacities of existing coal mining companies to increase coal export. There are also projects for the construction of new coal mines and processing plants, which can contribute to the coal export development. Given the demand for Russian coal in the Asia-Pacific countries, the main factors that constrained and will constrain export of Russian coal in the future are:

- capabilities of transportation infrastructure (carriage and throughput capacity of the Eastern Polygon railway, which includes the Krasnoyarsk, East Siberian, Transbaikal and Far Eastern railways);
- shortage of capacities in the Far Eastern coal terminals;
- lack of demand for low-grade coal processing products on the domestic market.

Coal (slightly less than 90% of production volumes) is transported to coal consumers, to border crossings, and to sea coal terminals mainly by rail (Table 9) [20–22]. The share of coal in the cargo transported by rail is of 25 to 27%. From sea coal terminals, coal is delivered to Russia's regions, where it is impossible to deliver goods by land transport, and for export.

The capacity of the Eastern Polygon of Russian railways and the lack of capacities of the Far Eastern coal terminals limit the export supplies of the required amount of coal [23].

The growing need for cargo transportation is ahead of the increasing possibilities offered by the ongoing modernization of Russian railways. Due to infrastructural restrictions that limit the development of Russian coal supplies to the Asia-Pacific countries, about 6% of exports to these countries are transported through European Russian ports [24].

The Comprehensive Plan, approved by order of the Government of the Russian Federation on September 30, 2018, involved the project "Development of the railway infrastructure of the Eastern Polygon" [25], but the measures taken to date do not meet the growing need to increase the volume of cargo transportation, including transportation of coal.

Coal companies also look for their solutions to transport coal, despite the limitations on the capacity of the railway infrastructure. The transported coal volume was increased partially by implementing a project that involved creating

Table 9. Characteristics of production, export, and transportation of Russian coal, million t

Index	Year						2015–2020
	2015	2016	2017	2018	2019	2020	
Coal mining	374	386.9	414.1	441.6	442.7	401.6	27.6
Loading coal on railway transport	323	329	359	375	372	353	30.0
Coal exports, total, including	156	171	190	210	218	212	56.0
Coal exports from the Eastern regions and Western Siberia, of which	149.4	160.5	183.9	190.1	190.3	192.8	43.4
Coal exports to Asia-Pacific countries	55	63.4	72.8	72.7	77	85.6	30.6
Transshipment in seaports, total, including	123	136	155	161	176	189	66.0
in Far Eastern ports	n.d.	81.8	86.2	91.1	98.8	107.6	25.8*

*Over 2016–2020

Source: [1, 20–22].

innovative next generation railcars, which can transport up to 77 tons of coal. The project was developed and implemented by the Production and Transport Department of JSC SUEK-Kuzbass in cooperation with JSC Russian Railways.

They also developed a technology to increase the weight of cargo in standard wagons up to 65–71 tons [26].

The Russian investment company A-Property LLC, which is the owner of Elgaugol LLC and the Ogodzhinsky open pit in the Amur Region, suspended production at the Ogodzhinsky deposit in 2021 to ensure coal export from the priority Elginsky open pit [27].

Coal exports include mainly coking and steam coal concentrates. In addition to concentrates, which are in demand on the world market, the coal beneficiation plants also produce middling, i.e., fuel of lower quality, suitable for use at energy facilities. The lack of demand for middling on the domestic market may also hold back the growth of coal export.

In 2022, two more factors were added to the listed factors limiting coal export:

- geopolitical conditions [28], and
- tariff policy of the JSC Russian Railways.

Sanction restrictions on the coal export to the EU countries, the United States and Canada affected the Republic of Khakassia, the Kemerovo and Novosibirsk regions. About 1.8–2 million tons of coal have been exported from Khakassia to Poland and the UK in recent years, which is 14–17% of the export volumes from these regions [1]. To a greater extent, these restrictions affected the Kemerovo and Novosibirsk regions, the volume of exports from which to the countries that supported the sanctions amounted to about 60% for the Kemerovo region and about 30% for the Novosibirsk region in previous years. The largest coal importers, China and some Asia-Pacific countries, have not yet joined the direct sanctions, which theoretically makes it possible to redirect export supplies eastward. Everything is only limited by the carriage and throughput capacities of the Eastern Polygon of railways and the changed tariff policy of Russian Railways. Until recently, coal was a priority cargo and belonged to the preferential first tariff class [29]. According to the Decree of the Government of the Russian Federation of March 6, 2022 no. 304 "On the suspension of the Decree of the Government of the Russian Federation of November 25, 2003 no. 710" [30], the tariff class for coal was changed to the second. The change in the tariff makes coal deliveries unprofitable, since the transportation distance for most companies is quite long. The longest distance is for the companies of the Kemerovo region, about 5.5 thousand km. Quotas for the coal volume to be transported (categories of shipments to be decided by President Vladimir Putin) are 76 million tons, of which 18 million tons are for the eastern regions of Russia. Quotas affected the coal supplies from Kuzbass, Buryatia and Khakassia. Other regions may lose the opportunity to supply coal for export.

VII. Conclusions

Coal exports from the Russian Federation and Mongolia currently overlap only in China's market. The competition between Mongolian and Russian coal only affected the coal supplies for export to China from the Republic of Sakha (Yakutia) and the Transbaikal Territory. At the same time, the total coal deliveries from all regions increased, regardless of the Mongolian coal supplies to China.

More significant changes in the volumes of Russian coal deliveries to the Asia-Pacific countries are made by geopolitical conditions related to sanctions, the capabilities of transport infrastructure, and the policy of JSC Russian Railways.

An obstacle to the supply of Mongolian coal through the territory of Russia to the sea coast is not only the limited capacity of the railways of the Eastern Polygon but also the fact that the Far Eastern sea coal terminals are mostly owned by Russian coal companies supplying coal for export. A positive aspect of the sanctions for the Mongolian coal export is the refusal of Japan and South Korea, the world's largest coal importers, to renew signed contracts on the import of Russian coal. The contracts were valid until August 10, 2022 [31].

Foreign companies take part in the development of export-promising coal deposits in Mongolia and Russia. The stability of the interests shown and the degree of participation of these companies in the projects are important for the development of coal mining at such deposits.

The main limitation for the increase in export supplies of Mongolian and Russian coal is the state of the transportation infrastructure. This limitation is especially relevant for Mongolia, which has no access to maritime trade routes.

The prospects for the development of Russian and Mongolian coal export depend on the following factors:

- State of the transportation infrastructure and implementation of projects for its development;
- Potential for the expansion of internal and external coal markets;
- Geopolitical conditions limiting coal consumption and the conditions associated with sanctions;
- Opportunities to increase the volume of exploration work;
- Contribution of foreign companies to the implementation of projects for the development of export-quality coal deposits.

In the future, depending on the dynamics of changes in these factors, Mongolian and Russian coal may compete on the international market. Moreover, for Mongolia, it is essential to build and develop international transportation corridors for the entry of Mongolian coal to the APAC market.

In the considered period, the growth in the Mongolian coal export supplies did not have a significant impact on the export of Russian coal. If sanctions are eased or lifted, there is little chance of significant competition between Mongolian and Russian coal.

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