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Study on Competitiveness of Mongolian Coking Coal

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Abstract. Mongolia is one of the richest countries in coal reserves. It ranks seventh in the world In terms of its coal reserves and first in terms of per capita reserves. Coal reserves are relatively evenly distributed in Mongolia. 2% of the total coal reserves are anthracite, 31% are hard coal and 67% are lignite. The mining sector plays an important role in the economy of Mongolia. As of 2019, the mining sector produced 25% of Mongolia's gross domestic product, 74% of total industrial products, and about 90% of export products. In Mongolia, about 90% of coals mined for the energy purpose is used as the fuel for thermal power plants. Mongolia exports most of its coking coal to China. Steel production of China is growing every year and the demand for coking coal is increasing, which is having a positive effect on the Mongolian economy. China is the closest market to Mongolia. This article studies the world's coal reserves, market outlook, the current situation and future prospects of Mongolia's coal sector, coking coal production of China, demand and supply, coal sector strategy of Mongolia, and opportunities to improve the competitiveness of the coking coal market.

Keywords. coal reserves, coal, coking coal, demand, supply, import, export

1. The current state of world coal market

1.1 World coal reserves

As of 2018, according to British Petroleum, the world's proven coal reserves have reached 1,055 billion tons. Coal accounts for 70% of total bituminous coal and lignite for 30%.

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Figure 1. World coal reserves by region (billion tons) Source: BP, Fenway Energy

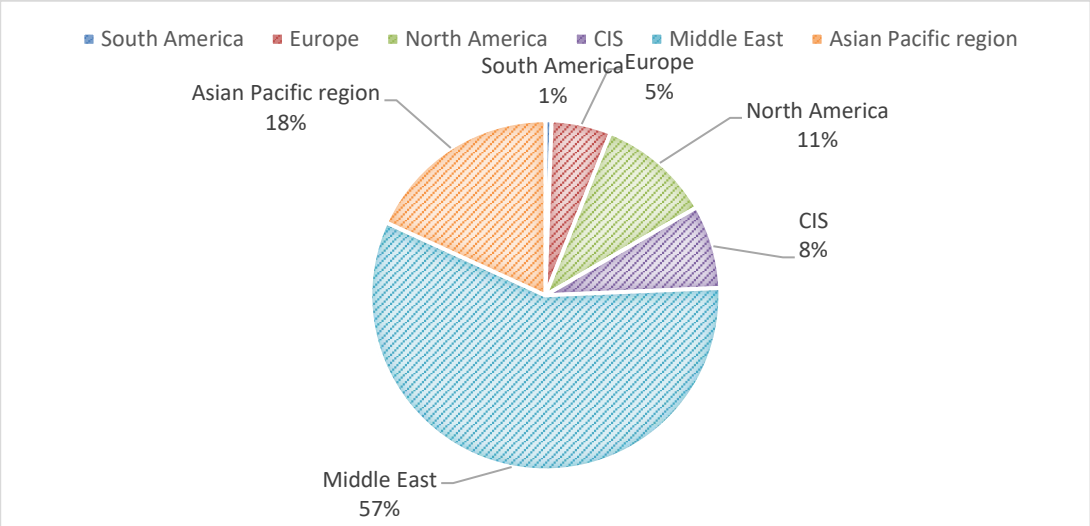
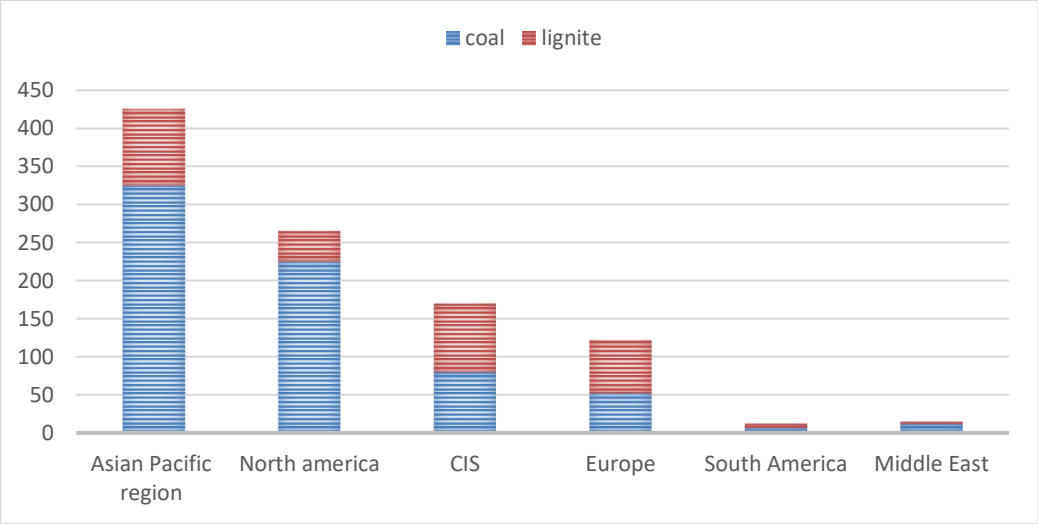


Figure 2. World coal reserves (billion tons) Source: BP, Fenway Energy



The United States leads the world in coal reserves (250 billion tons), Russia is next with 160 billion tons, Australia with 148 billion tons, and China with 138 billion tons. Mongolia is the world leader in coal per capita and ranked 7th in terms of total reserves.

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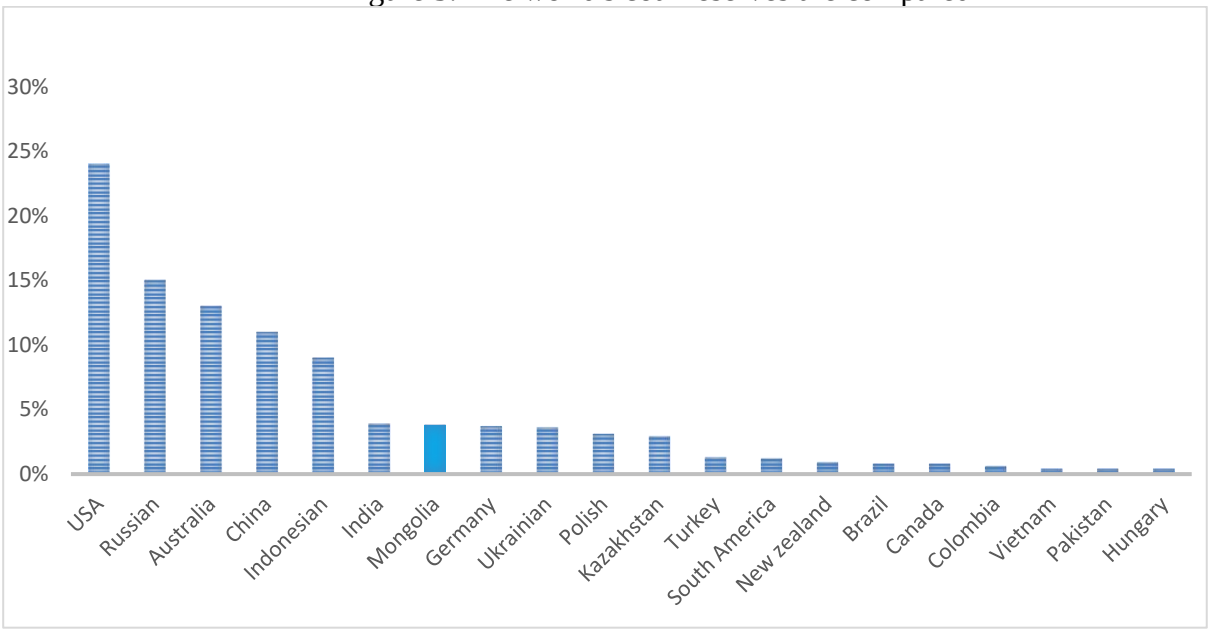
Figure 3. The world's coal reserves are compared

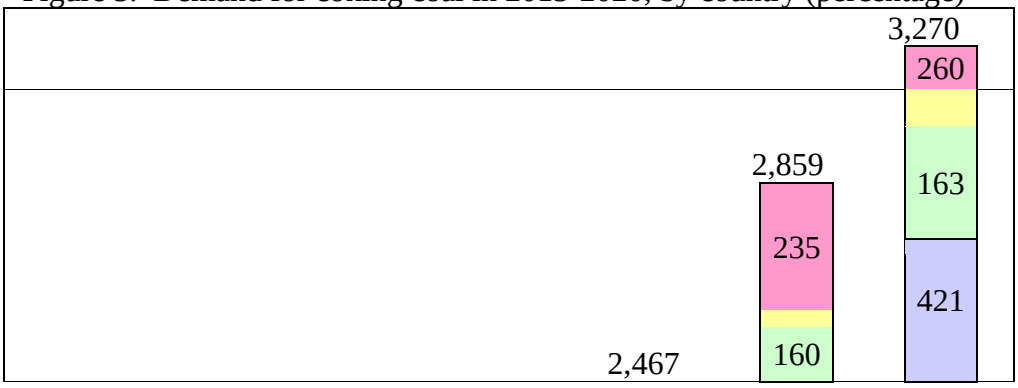


1.2 Consumption of coking coal, demand and supply

Global coking coal consumption fell from 1 billion tons in 2019 to 970 million tons in 2020, down about 3 percent. According to Fengwei Energy, China's largest coal research firm, global coking coal demand is projected to grow by about 2 percent a year to a record high of 1,065.2 million tons in 2025. It is estimated that it will gradually decrease over the long term and remain at 1,000 million tons.

Figure 4. Demand for coking coal, 2015-2020 (million tons)

Figure 5. Demand for coking coal in 2015-2020, by country (percentage)



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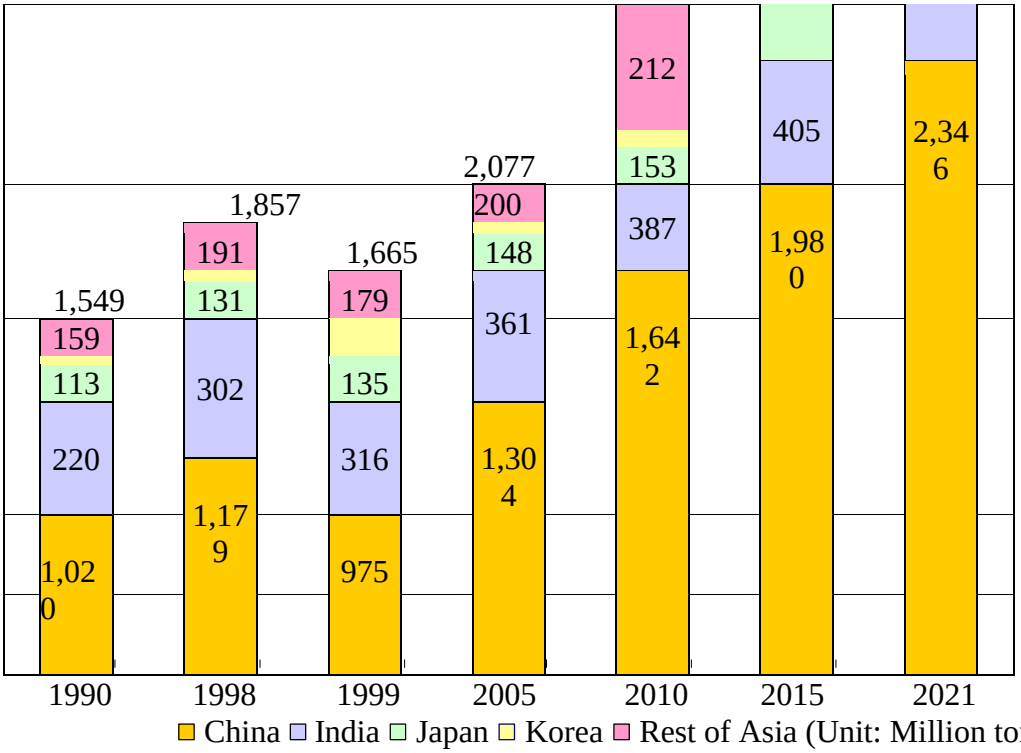

As can be seen from the figure above, China's demand for coking coal is expected to increase, while that of China, South Korea and Japan is expected to decline.

Table 1. Global coking coal supply and demand equilibrium, forecast

	2019	2020	2021E	2022E	2023E	2024E	2025E
Supply	7175.2	7072.3	7228.3	7237.2	7274.1	7313.5	7356.2
Demand	7109.5	6942.1	7171.4	7214.3	7263.3	7300.6	7341.7
Balance	65.7	130.2	56.8	22.9	10.8	12.9	

Global demand for coking coal will decline slightly in 2020 due to the COVID-19 coronavirus. However, from 2021, it is expected to increase due to the expectation that "post-pandemic world production will intensify". Table 1 shows that the equilibrium of coking coal supply and demand was largely different in 2020, and from 2021 the gap is gradually narrowing. In other words, the supply and demand for coking coal will reach a similar level.

2. Production, demand and supply of coking coal in China

China's coking coal supply increased from 493 million tons in 2015-2019 to 480 million tons. This is a decrease of 2.5% compared to 2015 and an average of 0.5% per year. In the future, the supply of coking coal is expected to increase from 478 million tons in 2019 to 487 million tons in 2025 due to the increase in steel production in China. In 2015-2019, the demand for coking coal increased by 3.6% from 534 million tons to 553 million tons. In the future, demand will gradually decline to 544 million tons by 2025. This is a decrease of 1.6% compared to 2019, and an average of 0.3% per year.

Figure 6. Supply of coking coal, million tons Source: NBC Fenwei

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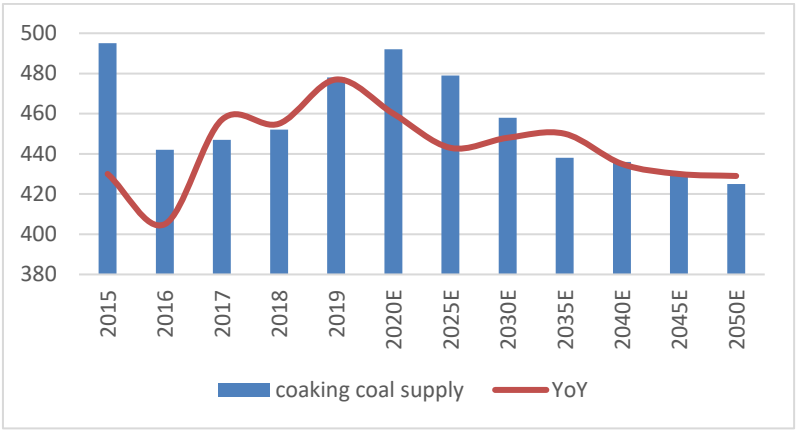
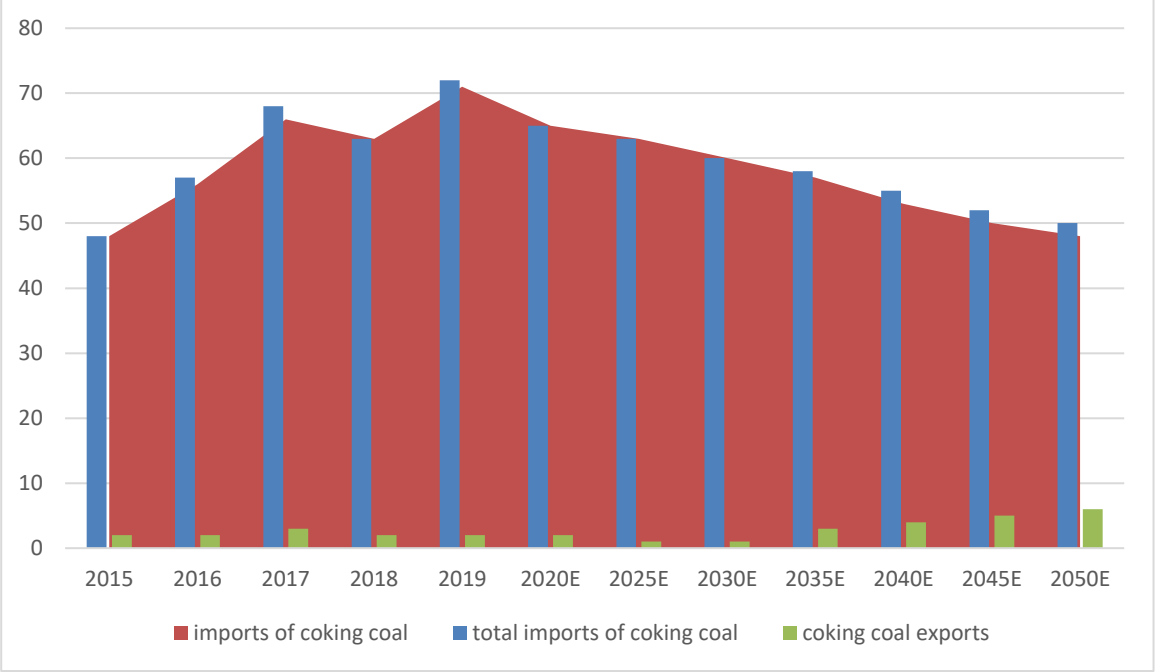


2.1 Chinese coking coal imports and exports

In 2015, China's coking coal imports rose sharply from 48 million tons to 74 million tons in 2019. In recent years, the supply of coal has increased due to the commissioning of new coal mines due to China's coal policy. In addition, coking coal imports are expected to remain limited as quotas have not been eased from previous restrictions on Chinese coal imports.

However, China's demand for imported coking coal will remain strong for a long time as China's ash and low-sulfur coking coal reserves dwindle. China's coking coal imports are expected to reach 71 million tons by 2025, an average annual decline of 0.7%. In terms of coking coal exports, it is expected to be 1-2 million tons per year before 2025.

Figure 8. Chinese coking coal imports and exports, million tons Source: NBC Fenwei



3. The current state of Mongolia's coal sector and opportunities to increase its competitiveness

The mining sector plays a key role in the Mongolian economy. As of 2019, Mongolia's mining sector accounted for 25% of GDP, 74% of total industrial output, and more than 90% of exports. In Mongolia, coal is the main energy resource. In addition, coal is a major export resource for mining that contributes to Mongolia's economic development.

3.1 Amount of Coal reserves

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Mongolia's estimated geological coal reserves are estimated at 173.3 billion tons, which is likely to increase in the future. As of today, more than 21.5 billion tons of coal reserves have been identified through preliminary and detailed exploration, and more than 300 coal deposits have been discovered and registered in 15 basins.

Coal is evenly distributed throughout Mongolia. In particular, there is an abundance of lignite in the eastern and Khangai regions, an intermediate transition from lignite to coking coal in the central region, and bituminous coal and coking coal are predominant in the western and Gobi regions.

Predicted coal geological resources are divided into 5 zones according to their age, quality and production significance. The percentage of specifications in each region is shown in Table 2.].

Table 2.

Specifications	Central region	Khangai region	Gobi region	Western region	Eastern region	Total
Number of coal deposits	13	13	20	23	16	85
Reserves, million tons	26.528.1	7704.1	49785.3	21157.9	51165.1	156340.5
Percentage of total reserves, %	16.5	4.7	30.6	16.7	31.5	100

The following activities are carried out in the Mongolian coal sector. These include:

1. There are 33 coal mining companies, total production reached 32.9 million tons. From which as of 31 August 2019 export accounted for 25 million tons and 5.3 was supplied for provinces.
2. 12 companies working for provincial coal supply with total production of 1.2 million tons of coal.
3. 4 coal supplier companies working with energy system of Central and Eastern regions. Total production – 7.7 million tons, sales volume – 7.8 million tons.

Table 3.

№	Specifications	2014	2015	2016	2017	2018	2019
1	Mining, thousand tons	24449.3	21146.1	35096.5	49480.3	54572.3	57128.8
2	Export, thousand tons	19513.0	14467.5	25809.3	33400.0	36671.4	36809.1
3	Sales, thousand tons	27305.0	22125.4	25809.3	33400.1	36671.4	36809.1

As of the first half of 2019, Mongolia's gross domestic product was MNT 17.7 trillion, of which 36.1% was accounted for by the mining sector and 14.7% by the coal sector. As of 2018, the coal industry employs about 13,000 people. Of these, 92.5% are male, 7.5% are female, and 109 are foreign workers. As of January 1, 2020, the total coal reserves registered in the State Reserve Register were 33.2 billion tons in Mongolia.

As of today coal accounts for 50% of total energy balance in strictly regulated USA market, 54% in socially oriented market economy of Germany, 72% in China with surging economy, 18.3% in Russia with enormous reserves of gas and oil, and lastly 90% in developing Mongolia. Of the organic energy sources, coal is the most widespread, the most resourceful, the most consumed, and the most stable one. As of today,

3.2 Coal market

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The most promising market for permanent sales is the Asia-Pacific region. Among them, the needs of the Northeast Asian region play a key role. The main coal exporters in the region are Australia, Indonesia, Vietnam, Canada and Russia. Mongolia's export accounts for small proportion of total coal import in Asia-Pacific region time-by-time. Coking coal importers in the region include China, Japan, South and North Korea, and India. If Mongolia manages its energy diplomacy properly and can become competitive in terms of railways, seaports, export infrastructure, prices and quality, it will be able to export coal products to the region.

Mongolia's main competitors in the region are Russia's Eastern Siberia and the Far East. These regions have huge reserves of economically efficient energy. In order to compete, transit transport is very important for Mongolia. In particular, the Silk Road project should be used as part of an economic corridor. In light of all this, Mongolia's Fuel and Energy Strategy needs to be linked to Northeast Asian consumption.

1. Mongolia's coal industry development strategy

The coal industry has the potential to link Mongolia to Northeast Asia. There are many forms of strategy such as protect, advance and catch through etc. For the Mongolian Fuel and Energy Complex, a catch through strategy is more appropriate to produce products that are competitive in the world market using cheap natural reserves and manpower. To do this:

- It is necessary to increase the competitiveness in the international market by introducing advanced technologies for coal mining, transportation and processing, improving the quality of coal and reducing costs
- Ensuring the recovery of coal raw materials by creating legal and economic mechanisms that can attract investment in coal geological research
- Stabilize the legal framework for the coal industry

2. Opportunities to improve the competitiveness of the Mongolian coking coal market

Coking coal accounts for the majority of Mongolia's coal exports. Therefore, it is important to study the coking coal market in detail and increase its competitiveness with other countries in order to increase coking coal exports. In terms of competition, Mongolia has the following strengths and weaknesses. These include::

Weaknesses:

- It has a large territory but a small population
- It borders only two countries
- Landlocked
- Domestic infrastructure is not well developed
- Railway transport is not developed
- Power supply is poorly developed
- Especially in the Gobi aimags, water resources are insufficient
- Labor resources are low
- Mining equipment and technology are not well developed, and most machinery and equipment are obsolete
- Coal waste and pollution
- Coal quality needs to be brought up to international standards
- Poor geological, technical and technological conditions of the deposit
- The socio-political conditions for mining are unstable
- Lack of legal environment
- Lot of pressure and influence from society

- Currently, the transportation of coal by road greatly reduces the competitiveness of the industry. In other words, the cost of transporting coal by road is $ 32, while transportation by rail is $ 8. Transportation costs can be reduced by up to 4 times.
- Insufficient capacity of border crossings
- Coal cannot be sold at international market prices
- Coal classification and processing have not reached the international level
- Coal prices fall as domestic companies compete with each other
- Domestic companies compete with each other to drive down coal prices

Strengths:

- Mongolia has abundant coal reserves
- High calorific value of coking coal
- The coal market is close, in other words, Mongolia supplies coal only to China. China is a huge market for coking coal and on the other side is Russia. This is the biggest advantage of our country.

Export policy:

- Establish a coal trading company and give importance on establishment of long term trade agreement (offtake agreement)
- Establish a nationwide trade association

3. Conclusion

By today, Mongolia has been working with only one market for coal exports. As of 2019, a total of 57.1 million tons of coal was mined and 36.8 million tons of coal was exported. Therefore, Mongolia's coal production, sales and exports are almost 100% dependent on China's coal supply and demand.

In order to increase Mongolia's coking coal market and its competitiveness, it is necessary to bring the coal quality to international standards, improve the legal environment, increase the carrying capacity of border points, reduce transportation costs and introduce urgently the railway transportation.

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