Introduction. Mongolia is a landlocked country which is located in Central Asia. Mongolia shares a border with Russia on the north side and with People’s Republic of China on the other side. At 1,564,116 square kilometers, Mongolia is the 19th-largest country with a population of around 3.2 million people. The scientists have found that territory is rich in minerals because they are located in the middle of three large watersheds and altitude of Asia according to the geology, geography and ecosystem. Mongolia has an abundance of mining resources with 1,947 deposits, over 9,000 occurrences and over 80 types of minerals.

Due to a coal export increase Mongolian FDI also has rebounded. Growth in FDI is likely to continue to remain positive by 2020. This is due to an increase in private investment in the mining and manufacturing sectors.

Mongolian economy has been based on agriculture, especially livestock, for centuries. However, in recent years, foreign companies have invested heavily in the development of Mongolian mineral deposits, which has led to the country’s future economic growth, which is largely dependent on the growth and development of this major sector. Whether Mongolia can become a major competitive industry in the world is highly dependent on the legal regulations for investors who are tend to invest in the mining sector. Mongolia has a world-class mineral deposits, and as a result of the exploration of foreign investors, it is possible to have the largest deposits open, not only in the mining sector, but also in the overall economic growth rate. Existing deposits enrich the country’s mineral resources by iron ore, lead-zinc, and uranium, and currently copper, gold and coal projects are being implemented.

Brown coal and bituminous which are produced only for domestic purpose become main products of heat supply. The products are highly demanded in domestic market as well. On the other hand, Mongolia is a central Asian country which is located between Russian Federation and People’s Republic of China. Lack of its own reliable export yield and communicates with few exporting countries. China, the world’s largest populated country in the world occupies 88 percent of total export price. Therefore, mineral resources are highly dependent on international market prices.

Literature review. The World Competitiveness Center has been publishing annual competitiveness research reports since 1989. Professor Michael Porter is the head of the World Competitiveness Center who is a founder of competitiveness theory which is a sector of economic science has been studying competitiveness for the past 30 years. Competitiveness is a deep understanding of many factors, including political, economic, technological, cultural, psychological, and management. The competitiveness of countries is a sector of economic science, and comparisons of reality and policy on creating and developing an environment where people are more profitable.

The index system contains 20 elements and more than 300 indicators (IMD, 2017). The World Economic Forum attached great importance to international competitiveness and considered lower-cost products and better service to be two key factors a ecting competitiveness (World Economic Forum, 2016). Porter proposed a diamond model (Porter, 1991), which included production factors, demand conditions, corporate strategy structure and peer competition to evaluate national competitiveness from the perspective of the value chain and industrial chain, pointing out that domestic competition has a positive influence on national competitiveness (Porter, 2010) [1, p. 842].

The product of a good entrepreneur is one of the competitiveness factors, and business entrepreneurship stimulates innovation and technological innovation. As a result, "creative destruction" occurs, and Joseph Schumpeter (1942) found that the old sectors of goods, services, and industries are always "destroyed" by the new generation.

Michael Porter (1990) studied the essence of other factors of competitiveness except of price and cost, and developed a theory of competitive advantage of the countries. Later, M. Delgado and M.E. Porter (2019) developed the concept of "Fundamental Competitiveness".

Uri (1971) defines competitiveness as the capacity to create conditions for high salaries. According to Orlowski (1982), it is the possibility to sell. According to Fagerberg (1988), it is “ability of
a country to realize central economic policy goals, especially growth in income and employment without running into balance of payment”. According to Krugman and Hatsopoulos (1987), the criterion of competitiveness is not only the capacity of a country to balance its foreign trade, but also to improve the standard of living [2, p. 123].

A basic competitiveness of a country can be measured by how much support can be given for the average employee’s output increase. In other words, the result of the competitiveness of the country is determined by the opportunity for people to run business for them. Basic competitiveness has three interdependent relationships. These include: 1. Social infrastructure and state institutions, 2. Money and fiscal policy, 3. Microeconomic environment. Analysing the 140 countries shows that each of these factors has a positive effect on labor productivity. The ability to attract foreign investment also demonstrates that the most important influence on basic competitiveness and currently there is no such concept of denial.

The senior expert at the Energy and Economic Institute of Japan Atsuo Sagawa, 2006 believes that “Coal is dangerous for the environment, but it will remain as a major source of energy with its price and supply stability. There is a meaningful difference between being a rich nation and being a competitive nation. So how can we measure that “How are we managing our social life through the nation made by ourselves? How do we strengthening the economy which is a quality of life assurance?”. It is fundamental to learn to measure competitiveness because it can not be controlled if it can not be measured and it can not be managed if it can not be controlled. Experiences of the country show that there are big competitive companies even in the poorest countries. It is hard to find countries with competitive SMEs. The developing of small and medium sized enterprises contributes to the development of the middle class. The middle class is the key to sustainable political and social development. Strong and unique image, traditional cultures of the country are big parts of competitiveness.

In the near future, large investment in Mongolia’s mining sector is likely to be significant due to an increase of FDI. However, it depends on how would it be spent. Most importantly, Mongolia’s development depends on the diversification of the economy and the development of other sectors through mining revenues. Generally rich and competitiveness is a completely different concept. You’re rich, but you are not competitive.

Methodology. The Annual Report of the World Competitiveness is the first comprehensive study report of this type and has been continuously being published from 1989. The report is done under 38 criterion to show the competitiveness of each participating country from all side. Two-thirds of data used in the Global Competitiveness Report are based on statistical data and 1/3 are based on information from questionnaires. Therefore, the report is not just a simple survey or questionnaires. To be more specific, the number of criterions has always been increasing. The methodology was developed as a result of the great wisdom of world national leading scientists and economists. According to this, the country’s competitiveness is divided into four main groups of factors. These include: Economic strength, Governance efficiency, Profitability of the business entity and Infrastructure.

The main objective of the index as a reflection of the current and future investment climate of Mongolia’s mining and minerals sector in the mining sector of more than 50 foreign and domestic investment companies is to further improve the policy and regulation of the mining sector, and furthermore, Mongolia to create a more favorable environment for investment in the mining sector. In the future, the index will present reports and policy recommendations annually to government policy makers and decision makers.

There are two main ways to measure competitiveness. First, compare the level of development with other similar countries according to specified criteria and indicators; Second, comparisons of the actual performance of yourself or the previous year’s performance.

The competitiveness of countries is a sector of economic science, and comparisons of reality and policy on creating and developing an environment where people are more profitable. There is a difference between wealthy and competitive nation.

There are many opportunities to do practical measurement in the world including The United Nations Development Program’s Human Development Index, the World Bank’s Business Development, the World Competitiveness Report of World Economic Forum, and the annual Competitiveness Report of the World Competitiveness Center. Mongolia does not have its own competitiveness surveys, and some of the reports and indexes of these organizations has been seen in generally. The Economic Policy and Competitiveness Research Center was established in 2010 with a view to understanding and measuring Mongolia’s competitiveness and developing a report and policy document.

The purpose of the organization is to make international standardized researches which are targeted to develop Mongolia’s competitiveness in the world. The Economic Policy and Competitiveness Research Center has made Mongolian Competitiveness Report for 2010-2018.

Methods and steps to estimate the Competitiveness Index

Step 1: Determine the distribution of each parameter and normalize the distributions taking logarithm in case of abnormal distribution.

Step 2: Standardize the parameters. The baseline component for estimating and ranking the competitiveness index is the standardized evaluation for each indicator. It is important to quantify the data with different quantities obtained from statistical data and questionnaire. The standardized value shall be calculated by each equation as follows:

\[ STD(x) = \frac{x - \mu}{\delta} \]

Where, \(x\) is criterion, \(t\) number;
\(x\) – \(x\) average value;
\(\delta\) – \(x\) standard bias of value.

Higher standardized evaluation indicate that the indicator has a positive impact on the competitiveness, but in some cases the value is reduced, the more presence of which have a more positive effect on the competitiveness. In this case, multiply the standardized value by (–1).
Step 3: Calculating and ranking the general Competitiveness Index. To calculate the general competitiveness index, calculate the average standardized evaluation for each of the 20 sub-groups’ criterion and using weighted average. This allows the subtraction of the subgroups to be kept constant, while the statistical information is inadequate and is likely to prevent affecting other groups, and increases the reliability of the overall results. Based on the 20 sub-groups average standardized evaluation index is calculated by the following general formula:

\[ I = \frac{STD(x) - STD_{\text{max}}(x)}{STD_{\text{max}}(x) - STD_{\text{min}}(x)} \]  

Where, \( I \) – Competitiveness Index; 
\( STD(x) \) – standard evaluation of criterion; 
\( STD_{\text{max}}(x) \) – the minimum value of standard evaluation of criterion; 
\( STD_{\text{min}}(x) \) – the maximum value of standard evaluation of criterion.

The four general groups of competitiveness are calculated on the simple average of the subgroups in the general index and the general index is calculated on the average of total 4 groups.

Current situation of Mongolia’s FDI competitiveness of the mining sector

Mongolia was under a state planning economic system from late 1940 to 1989. During this period production and investment decisions were regulated by the government and there was no role for the private sector. Further, the economy was highly integrated with the Former Soviet Union (FSU) and the other planned economies of the Council for Mutual Economic Assistance (CMEA), and the economy was closed for foreign investment [3, p. 666]. Khindanova’s works (2005, 2006 and 2007) are the only known efforts dedicated to empirically connect some measures of the geological potential and the investment climate to mining investments in a particular country [4, p. 66].

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The Center for Policy Research at the Mongolian National Mining Association conducted a study on evaluating the competitiveness of the mining sector as a result of mining policy, regulatory, institutional quality, governance efficiency, infrastructure development, and developed an investment competitiveness index.

The Investment Competitiveness Index-2008 is being developed for the first time. The index is based on 15 criterions such as the economic, political sta-

Table 1

<table>
<thead>
<tr>
<th>Deposit type</th>
<th>Unit</th>
<th>Registered reserves, 2018-2019</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ore</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
</tr>
<tr>
<td>Gold (rock)</td>
<td>ths.t/kg</td>
<td>6,537.9</td>
</tr>
<tr>
<td>Gold (placer)</td>
<td>kg</td>
<td>5,140.2</td>
</tr>
<tr>
<td>Iron</td>
<td>ths.t</td>
<td>44,969.8</td>
</tr>
<tr>
<td>Polymetallic</td>
<td>ths.t</td>
<td>167,692.3</td>
</tr>
<tr>
<td>Cooper</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Zinc</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Blue lead</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Gold</td>
<td>kg</td>
<td>–</td>
</tr>
<tr>
<td>Silver</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Tin</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Tungsten</td>
<td>ths.t</td>
<td>36.6</td>
</tr>
<tr>
<td>Tungsten</td>
<td>ths.t</td>
<td></td>
</tr>
<tr>
<td>Rare earth elements</td>
<td>ths.t</td>
<td>356.8</td>
</tr>
<tr>
<td>Cooper Molybdenum</td>
<td>ths.t</td>
<td>55,871.2</td>
</tr>
<tr>
<td>Cooper</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>t</td>
<td>–</td>
</tr>
<tr>
<td>Flurospar</td>
<td>ths.t</td>
<td>6,932.0</td>
</tr>
<tr>
<td>Uranium</td>
<td>ths.t</td>
<td>51,583.2</td>
</tr>
<tr>
<td>Zinc</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Zinc</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Blue lead</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Silver</td>
<td>kg</td>
<td>–</td>
</tr>
<tr>
<td>Iron</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Coal</td>
<td>mln.t</td>
<td>9,662.7</td>
</tr>
<tr>
<td>Silicon</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Limestone</td>
<td>mln.t</td>
<td>52.7</td>
</tr>
<tr>
<td>Building stone</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Graphite</td>
<td>ths.t</td>
<td>–</td>
</tr>
<tr>
<td>Marble</td>
<td>ths.m³</td>
<td>–</td>
</tr>
</tbody>
</table>

Source: Data from Geology and Exploration Division, MRPAM
tus, quality and efficiency of governance, infra-
structure development, quality of geological data, 
stability, rationality of the mining legislation, gen-
eral level of mining taxation, environmental regu-
lations, and local citizenship, safety and security. Table 1 shows the amount and the type of natural
resource.

Mining is one of the big reliance of Mongolia’s
economic growth, occupying 18 percent of GDP in
2018, 90 percent of exports and 19 percent of budget
revenue. In recent years, due to over-dependence
on coal, copper and gold exports Mongolian econo-
my is becoming more vulnerable. Coal export price
in the world market has fallen dramatically is led
to a major problem in the Mongolian economy. This
also led Mongolia to a loan from the international
fund in order to meet the balance of payments re-
quirements.

More than half of Mongolian foreign trade
done with China 90% of exports are exported
through China. China is highly interested in par-
ticipating in Mongolia’s energy reserves and miner-
al extraction. As a result, some political issues are
appeared in Mongolian Government. Since 2017,
foreign and domestic investment has been increas-
ing in the mining sector.

FDI and Competitiveness
of Mongolia’s coal sector

Mining productions are the important factors
to the mining industry competitiveness and the con-
crete manifestation of the core competitiveness
[5, 161]. Mongolia is located in the Central Asian
Orogeny Zone. The zone consists of tectonic blocks
and layers which are from ancient Paleozoic, lat-
er Paleozoic and partly from the ancient Mesozoic.
As a result of these fracture, Mongolian coal basins
which contain Carbon, Perm, Jura and Cretaceous
sedimentary were formed. Total 300 coal deposits
and basins have been identified.

Energy coal is used in coal fired power plants
to produce steam and electricity. Coke coal is
used to produce coke, iron and steel production.
Bituminous is heated in high temperature in or-
der to produce coke. The energy and coking coal
reserves are major mineral reserves in Mongolia.
Mongolia is one of the 10 countries which has the
biggest natural resource. According to the Mongolian Coal Association, coal exports will
reach 50 million tonnes by 2020 and by 2025,
80-100 million tonnes of coal will be exported an-
nually and potential markets are China, Russia,
Japan and South Korea.

Coal is not only major raw material of Mongo-
lian mining sector but also contributing expansion
of Mongolia’s budget revenues. Therefore, the Min-
istry of Mining is paying special attention to the
coal sector. Under this concept, the "Coal" program
was developed. The government is supporting the
policy on increasing exports of coal, expanding mar-
ket and processing For Mongolia, there is only one
customer, China. There is a need to create a market
competition between many costumers. The govern-
ment and the private sectors are seeking the solu-
tion of coal processing, enclosing added value, sell-
ing to other markets through ports.

We are pursuing a policy to supply coal to Japan,
South Korea and Europe. There is some progress in
this area in our private sector. The coal washing
plant has begun its organization. Furthermore, the
state is paying attention to the establishment of
cool and chemical production in Mongolia.

Mongolian coal is trying to compete with Aus-
tralian coal. When it comes to re-processing the
cool and exporting coke, there is an opportunity to
compete. Coal price is available to be raised due to
end consumer is satisfied for the coal quality. The
Tavan Tolgoi mine is one of the world’s largest cok-
ing coal deposits, and Oyu Tolgoi is expected to be
one of the world’s largest copper mines.

Price of coal depends on production quality and
it is important to ensure the market price. There-
fore, coal prices need to be relative with quality.

Mongolia has an estimated 173.3 billion tons
of hypothetical coal reserves and an forum named
Coal Mongolia’s is held in every year to attract in-
vestors. Foreign investors are only interested in in-
vestment by believing in the future. For them, the
Mongolian coal market is becoming a “new busi-
ness”. Then, how to increase the competitiveness
of Mongolian coal? Finding answers is the main pur-
pose of the annual forum of Coal Mongolia. Divide
cool resources into economic zones of Mongolia and
describe the times when and how the resources will
flow into the economy depending on the regional
and coal characteristics. It is possible to develop
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describe the times when and how the resources will
flow into the economy depending on the regional
and coal characteristics. It is possible to develop
gas like the natural gas that can meet the international standard of coal with the latest advanced technology. A certain proportion of total revenues from exploitation of coal deposits will be devoted to the country’s geological survey and the policy of increasing the state’s coal reserves will be pursued.

Coal is very important from other minerals. Whereas gold and copper are very small and expensive, coal is large and covers a large area. Because of the use of heavy equipment and technology, it has a negative impact on the environment. It also requires high technology and high investment.

Today, over 140 enterprises are ready to operate. It is capable of extracting more than 100 million tons of coal in total capacity. However, according to the survey, 60 to 70 million tonnes of coal will be produced annually until 2025. Last year, about 20 million tons of coal was exported and it is planned to issue 30 million tons of coal this year.

Although Mongolia is capable of exporting 100 million tons of coal a year, only 30 million tons of coal is delivered to the market, over 70 million tons of coal becoming surplus. It is important to improve the quality of coal and the deep processing should be done. In this case, coal prices will rise and the world market and available to be competitive. Our coal quality is possible to meet the demand of the world standard.

Coal prices are likely to grow in 2020 compared to the first quarter of 2019. However, the state policy should be clear and the legal environment should be stable. The Ministry of Mining is focusing on increasing coal extraction, but it has been developing a policy related only with the numbers.

China has 6 billion tons of coal consumption. Over 3.2 billion tons of coal is explored by themselves. Mongolia has exported 36 million tons of coal to China in 2018.

Mongolia is going to compete in the coal market with Australia, the US and Russia. We are geographically preferred to supply coal to China, but we have to transport a small amount of coal by road. This is causing to weaken the competitiveness of coal. Many different end products can be produced from coal.

The prospects of future coal production and mining depend on the following: “A system of mining Coal resource in a smart way and safely for the environment”. The coking coal and energy coal are explored together which are closely interconnected with mineral-rich deposits of limited power. On the technical side, it is necessary to develop equally quality of the coal market. This is to ensure that mineral resources are fully utilized, and avoid the loss of natural resources.

Mongolian coke coal is a high-quality solid coal and coal importers of the world are keen to buy it from Mongolia for a long-term with a reliable supply. In this case, international consumers are connected to the seaports with convenient facilities. Mongolia can become a coal producer and exporter country. But before that, it is important to solve equipment and heavy machinery supply for transporting large amount of coal. Since 2020, Mongolia will be a strong competitor in the coal, especially coke-coal market. The reliability of coal sales will depend on transportation and production costs. At present, Mongolia’s coal production costs are low but transportation costs are very high.

Conclusion and recommendations. The industrialization of Mongolia is aimed at developing the domestic coal industry. The industrialization of society should be supported by low-cost electricity. The basis of competitiveness is about existence and survival. When it comes to a rating score, it has an advantage to competitive.

In order to improve the competitiveness of coal, we need to increase the revenue from coal exports. It is important to increase the revenue of the coal industry by enhancing the competitiveness.

Mongolia has created a competitive environment for the preservation, improvement and use of this comparative advantage of coke coal. Mongolian coal sector is one of the competitive industries in the international market. The strategy is very important for the economic development of the country. Therefore, it is necessary to support new technology, management, marketing and investment in coal development. It is time to establish an export exchange for mining products to increase the competitiveness of coal. The Ministry of Mineral Resources is required to develop a law on exchanges.

It is necessary to implement new transportation and logistics policies, such as coal processing and international railways, and railway development.

Mongolian Government and the Ministry of Mining should support the development of coke-chemicals, coal-chemical production, and the development of semi-processed and end products with high demand for foreign products which are environmental friendly. Private mining companies are possible to attract investors and consumers thanks to the good quality of Mongolian coal.

Although the coal market of the coking coal product, the coal market, is not yet fully developed in Mongolia, but coke coal is expected to have a long-term demand on the world market.

References: